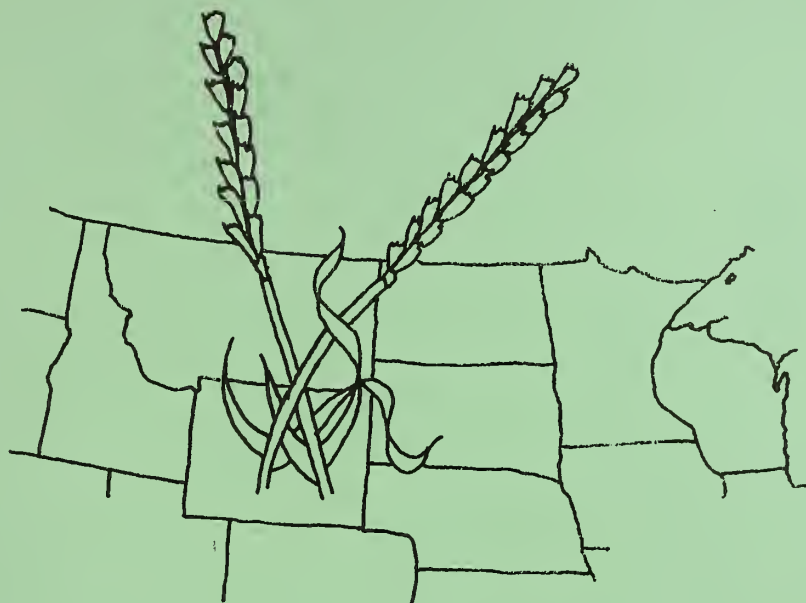


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HARD RED SPRING WHEAT



QUALITY REPORT

Physical, Chemical, Milling, and Baking Characteristics

1972 CROP

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
NORTH CENTRAL REGION



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
in cooperation with
STATE AGRICULTURAL EXPERIMENT STATIONS

REPORT OF PHYSICAL, CHEMICAL, MILLING, AND BAKING EXPERIMENTS

WITH HARD RED SPRING WHEAT

1972 CROP^{1/}

by

W. C. Shuey, Research Food Technologist; J. W. Dick, Food Technologist; R. D. Crawford, R. D. Maneval, and N. B. Lofthus, Technicians, Agricultural Research Service.

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^{1/} This is a progress report of cooperative investigations containing some results that have not been sufficiently confirmed to justify general release; interpretations may be modified with additional experimentation. Confirmed results will be published through established channels. The report is primarily a tool for use of cooperators and their official staffs and to those persons having direct and special interest in the development of agricultural research programs.

This report was compiled by the Agricultural Research Service, U.S. Department of Agriculture. Special acknowledgment is made to the North Dakota State University for their facilities and services provided in support of these studies. The report is not intended for publication and should not be referred to in literature citations nor quoted in publicity or advertising. Use of the data may be granted for certain purposes upon written request to the agency or agencies involved.

Hard Red Spring and Durum Wheat Quality Laboratory
Fargo, North Dakota



COOPERATING AGENCIES, STATIONS, AND PERSONNEL

The cooperating agencies and stations conducting the varietal plot and nursery experiments from which the 1972 spring wheat samples were received are listed below:

Idaho Agricultural Experiment Station:

Aberdeen and Tetonia

Minnesota Agricultural Experiment Station:

Crookston and St. Paul

Montana Agricultural Experiment Station:

Bozeman, Havre, and Sidney

North Dakota Agricultural Experiment Station:

Carrington, Dickinson, Fargo, Langdon,
Minot, and Williston

South Dakota Agricultural Experiment Station:

Highmore

Wyoming Agricultural Experiment Station:

Sheridan

A complete list of all cooperating agencies, stations, and personnel for the year will be found in the report by Dr. R. E. Heiner, "Results of Spring Wheat Varieties Grown in Cooperative Plot and Nursery Experiments in the Spring Wheat Region in 1972."

INTRODUCTION

Samples of standard varieties and many of the new strains of hard red spring wheat grown in cooperative experiments in the spring wheat region of the United States^{2/} have been milled each year by the USDA. The flours were assayed chemically and physically and baked into bread to determine the quality characteristics. The purpose of this report is to make available to the cooperators, quality data on the standard varieties and new strains of hard red spring wheat from the 1972 crop.

The same general format and techniques were used in evaluating the wheats as outlined in quality reports for previous years. The data contained in this report are comparable to data in past reports and, where applicable, average results and also the average results of the 1971 crop are compared.

The format adopted in 1962 for the evaluation of a sample utilized three categories: kernel characteristics, milling performance, and baking evaluation. The basic difference between this report and previous reports is the manner in which the ratings were obtained. Previous to the 1970 crop report, an individual judgment was used to ascertain the rating for each sample. A brief description of the new technique is given on Pages 9 and 10 of this report. It is hoped that with the use of this technique, a more objective evaluation is obtained. Also, it will be possible to quickly deduce the various characteristics of the selection and any outstanding features or deficiencies which are apparent. No specific comments are made regarding the mixogram patterns, since reference mixograms for each of the general types are presented at the end of the report.

The 1972 crop was grown under spotty but generally favorable conditions with plenty of rainfall, although much of the crop was seeded late due to wet field conditions. The average extraction was higher than the 1971 crop and the flour mineral content at 65% extraction was lower even though the wheat mineral content was the same. The protein content was approximately 1% lower than last year.

The baking performance was slightly poorer than last year. Lower absorption was experienced averaging 1.3% less. Even though the protein content of wheat was lower, the loaf volume was about the same. The doughs were slightly weaker than last year which might be expected because of the lower protein content.

The oxidation requirements for the 1972 crop were somewhat erratic, but on the average required less bromate than last year.

^{2/} Heiner, R. E. "Results on Spring Wheat Varieties Grown in Cooperative Plot and Nursery Experiments in the Spring Wheat Region in 1972." Agricultural Research Service, U.S. Department of Agriculture, St. Paul, Minn.

SOURCE OF THE SAMPLES

Tests were performed on 563 samples received from field plots, uniform regional nurseries, and sawfly yield nurseries of the 1972 crop. These samples originated in six states: Idaho, Minnesota, Montana, North Dakota, South Dakota, and Wyoming. Fifteen stations from these states were represented, namely, Aberdeen and Tetonla in Idaho; Crookston and St. Paul in Minnesota; Bozeman, Havre, and Sidney in Montana; Carrington, Dickinson, Fargo, Langdon, Minot, and Williston in North Dakota; Highmore in South Dakota; and Sheridan in Wyoming.

Due to apparent differences in the characteristics of the wheats and protein contents, no samples were blended this year.

On page 5 are listed the spring wheats which were included in the 1972 Uniform Regional Nursery trials. The variety or cross, the station which developed the variety, the state selection number, and the C.I. number are given.

In Table 12 are given the average data for the Uniform Regional Nursery samples. The data for kernel characteristics and milling performance are arithmetical averages of the individual samples. However, the mixograms and baking data were obtained from blends of equal proportions of the individual flours for each sample from the 15 stations.

In Table 17 are given the average data for the Sawfly Yield Nursery samples obtained from the arithmetical averages of the individual samples.

ENTRIES FOR THE 1972 UNIFORM REGIONAL HARD RED SPRING WHEAT NURSERY

Entry No.	Cross or Variety	C.I. or Sel. No.	Year Entered	Source
1	MARQUIS	3461	1929	Canada
2	JUSTIN	13462	1959	ND
3	SELKIRK	13100	1953	Canada
4	CHRIS	13751	1960	USDA-MN
5	WALDRON	13958	1964	ND
6	ND140/ND363	ND491	1970	ND
7	do	ND506	1971	ND
8	WALDRON/RL4205	ND507	1972	ND
9	WALDRON "S" *2/AGENT/3/3*WALDRON "S"/T1673/3*KT48	ND509	1972	ND
10	ND373*2/RL4205//3*ND373/ GIZA HEGAZY AHMER	ND511	1972	ND
11	ND455*2/AGATHA/3/3*ND455//T1673/ 3*KT48	ND515	1972	ND
12	do	ND510	1972	ND
13	MANITOU*2/RL4124.1	RL4238	1972	Canada-Winnipeg
14	B52-91//KF/CNT	MT661718	1972	USDA-MT
15	ERA	13986**	1968	USDA-MN
16	YI-55-14/II-60-105	II-64-27**	1972	USDA-MN
17	do	II-64-33**	1972	USDA-MN
18	CHRIS*2/II-60-46	MN6601**	1972	USDA-MN
19	JT*2/4/MD259/CLY//CLY/ND122/3/JT/ 5/ND363	ND497** ^{1/}	1971	ND
20	do	ND499**	1970	ND
21	ND476//CLY/ND122	ND508**	1972	ND
22	SI/3/NRN10/BVR14//5*CNT	MT7042**	1972	USDA-MT
23		FBA004**	1972	Funk Bros.
24		FBW406**	1972	Funk Bros.
25		FBW434**	1972	Funk Bros.
26	PROTOR**	NK70Y14	1971	Northrup King
27	PJ60/3/HRY*7/P54//K184/7*WIS250/4/ K184/4*WIS250	H678-1-6-9**	1969	USDA-WIS
28	HRY/SPS//RMR	H689-5-5	1972	WI

** Semidwarf

^{1/} Named and released by the North Dakota Experiment Station on March 1, 1973 as variety, Olaf.

METHODS

The terminology and methods used are briefly described below:

Test Weight Per Bushel - The weight per Winchester bushel of cleaned, dry, scoured wheat. To determine the dockage-free test weight on a comparable sample, approximately one pound per bushel should be subtracted from the value given.

1000 Kernel Weight - The 1000 kernel weight was determined by counting the number of kernels in a 10 gram sample of cleaned, picked wheat with an ASCO Seed Counter^{4/}.

Kernel Size - The percentages of the size of the kernels (large, medium, and small) were determined on a wheat sizer as described by Shuey^{5/}.

The sieves of the sizer were clothed as follows:

Top Sieve	- Tyler # 7 with 2.92 mm. opening
Middle Sieve	- Tyler # 9 with 2.24 mm. opening
Bottom Sieve	- Tyler #12 with 1.65 mm. opening

Potential Yield - The potential yield is not shown on the computer tables but it can be determined by multiplying the percentages of the overs of each sieve #7, #9, and #12, by the value of 78%, 73%, and 68%, respectively. The accumulation percentage would be the potential yield.

Milling - The samples were cleaned by passing the wheat over an Emerson Kicker and Dockage Tester and through a modified Forster Scourer Model 6. The clean dry samples were pre-tempered to 12% moisture for at least 72 hours; then tempered to 16% moisture and allowed to stand overnight prior to milling.

All samples except the field plot samples were milled on a Brabender Quadrumat Junior Mill. The mill was equipped with a #18 wire on the drum sieve. The throughs of the #18 wire were rebolted on a Strand Sifter equipped with a #60 Tyler sieve. The sample was sifted for 1 minute. The throughs of the #60 wire were classified as flour and this was the material tested. The overs of the #18 wire were classified as bran and the throughs of the #18 wire and overs of the #60 Tyler sieve as crude shorts.

The field plot nursery samples were milled on a Buhler Continuous Experimental Mill. This mill has been slightly modified to give results

^{4/} Mention of a trademark name or a proprietary product does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture, and does not imply its approval to the exclusion of other products that may also be suitable.

^{5/} Shuey, William C. A Wheat Sizing Technique for Predicting Flour Milling Yield. Cereal Science Today 5: 71-72,75 (1960).

THE HISTORY OF THE UNITED STATES OF AMERICA

BY HENRY REEVE, ESQ. OF NEW-YORK.

IN THREE VOLUMES.

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more comparable to commercial milling. The break scalping sieves were clothed with #54 stainless steel wire, the reduction scalping sieves with #58, #66, and #105 stainless steel wire for the first, second, and third reduction, respectively. All of the flour sieves were clothed with #135 stainless steel wire.

All six flour streams were combined to give the patent flour. The extraction of a good milling wheat using this flow is approximately 68%. This is comparable to a commercial "long patent" extraction flour. At this flour extraction of the wheat, the changes in flour ash are most sensitive to changes in percent extraction.

Protein Content - The protein was calculated by multiplying the factor of 5.7 times the percent nitrogen as determined by the standard Kjeldahl procedure.

Mineral Content or Ash Content - This was determined by measuring the residue of the minerals left after incinerating the sample for approximately 16 hours at 565° C. The results were reported as percentage of the sample which was incinerated.

Mixogram - The mixogram was determined by using 30 g. of flour and adding 20 cc. of water. The sensitivity spring setting was set at 10. All mixograms were run with constant weight of flour and volume of water. Absorptions reported were adjusted according to the height of the mixogram. The correction factor was determined from a series of flours by varying the amount of absorption.

Mixogram Pattern - The reference mixogram patterns given at the end of the report demonstrate the different types of mixograms which were obtained. A single number is assigned each pattern to characterize and simplify the classification of the curves - the larger number indicating stronger curve characteristics.

Baking Procedure or Formula - The baking formula used was as follows:

100% flour	3% milk D.S.M.
2% salt	3% yeast
5% sugar	2% shortening (Crisco, melted)

The sample was mixed to development in a National Manufacturing mixer; for the 25 g. sample the Micro mixer, and for the 100 g. sample the 100 g. Special mixer size. Also 10 p.p.m. of bromate, except for the 100 g. samples in which 5 p.p.m. of bromate was used for oxidation and 0.1% Barley Malt Flour for enzymatic supplement. The dough samples were moulded in a Roll-Er-Up moulder.

Absorption - This was the water, expressed as percent of the flour, required to bring the dough to proper consistency.

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CHICAGO, ILLINOIS

DEPARTMENT OF CHEMISTRY
FACULTY OF DIVISION OF PHYSICAL SCIENCES
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RECEIVED
JANUARY 10, 1964

BY
J. H. HARRIS, JR.
AND
J. H. HARRIS, JR.

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Crumb Color - This value was determined by comparing the loaf of the tested sample against a baking standard. This standard was selected as an average for the crop year for the spring wheat area.

Loaf Volume - This was volume of the baked loaf as determined by seed displacement.

All values (Protein, Ash, and Absorption) were reported on a 14% moisture basis.

DISCUSSION

The following discussion presents some of the basic techniques and criteria used in the milling and baking quality evaluation of the samples. There are four major evaluation categories used: kernel characteristics, to characterize the kernel; milling performance, to evaluate the general milling characteristics; mixogram patterns, to classify the flour as to type; and baking evaluation, to rate the flour as to overall baking.

Each evaluation category can be important. A sample could be of a sufficiently poor quality for a given category to eliminate it from possible future testing. However, a sample submitted for the first time and found to be questionable should be tested again to establish if it has a satisfactory or unsatisfactory classification. A sample which is consistently rated as questionable should be discarded.

A computer program for evaluating milling and baking quality was developed from 749 previously evaluated uniform regional nursery samples. The samples represented 5 crop years, 7 states, 21 stations, and 33 series. Chris, Justin, and Selkirk were selected as the standard varieties for each series. The percent deviation of each independent variable varied from the mean of the standard varieties was determined. Limits consistent with previous data obtained on the 749 samples were established for each independent variable. Nebraska regressions were run to establish the regression coefficients of each variable.

Six characteristics (test weight, 1000 kernel weight, percent large kernels, percent small kernels, wheat mineral, and wheat protein) were independent variables used to calculate the dependent variable - Kernel Characteristics. Four characteristics (percent extraction, mineral @65% extraction, milling characteristic, and protein difference between flour and wheat protein) were used to calculate the dependent variable - Milling Performance. Bake absorption, mixing time, dough characteristics, crumb color, crumb grain, and loaf volume were the six independent variables used to determine the dependent variable - Baking Evaluation. These three dependent variables after calculation become independent variables, used to calculate the dependent variable - General Evaluation.

The three dependent variables, Kernel Characteristics, Milling Performance, and Baking Evaluation are rated on a scale of 1 to 8, with 1 being Very Satisfactory and 8 being Unsatisfactory. The General Evaluation is rated on a scale of 1 to 4, with 1 being no promise; 2, little promise; 3, some promise; and 4, good promise. If one of the independent variables conver value is 8 (with the exception of crumb color), this automatically will rate the General Evaluation as 1, or no promise. If there are no 8's, the three values are employed in a regression equation to derive the General Evaluation. The weighted value for each of these variables on the General Evaluation are approximately 6% for Kernel

Characteristics, 47% for Milling Performance, and 47% for Baking Evaluation.

To quickly point out problem areas for a selection, two additional columns have been added to the printout. One column is minor deficiencies in which the independent variables converted to a 5 or 6, that is Questionable or Questionable to Unsatisfactory will appear. The second column is major deficiencies in which the independent variables were converted either to a 7 or 8, that is Unsatisfactory to Questionable and Unsatisfactory. Deficiencies of the various selections may be readily determined by scanning these columns. It is also possible to have one or two independent variables that would appear in the major deficiency column, rating 7 and should be given serious consideration, but they still did not influence the general rating sufficiently to rank the selection as having no promise.

All samples, as in previous years, are compared to a milling and baking standard which represents a blend of the crop year blended to a known quality. However, the samples for the individual stations are evaluated against the average results of the check varieties from the respective stations. The agronomic and climatic conditions of the individual locations can effect the quality of the wheat sample, such that, the evaluation at certain locations could have all samples — even the named varieties — classified as questionable to unsatisfactory. Therefore, the evaluation ratings of one station are not directly comparable to those of another station. For example, an area may produce low protein wheats which give large and plump kernels, good milling and kernel characteristics, but low protein and unsatisfactory baking properties such as short mixing time, low loaf volume, and weak dough characteristics. The wheat from this area could not be considered as a strong spring wheat, and would not maintain the quality expected from the spring wheat producing area. A good variety should have tolerance to a wide range of environmental conditions and the overall picture taken into consideration for establishing these varieties.

Kernel Characteristics are important in determining the initial value of the wheat and, if extremely poor, could disqualify a new variety from further consideration. Because of the present grading system, it is desirable to have a good test weight. If a sample has a low 1000 kernel weight and small kernel size distribution, it would be considered a poor sample for milling because of the high ratio of bran to endosperm. Therefore, it is desirous to have plump kernels. Wheat ash is an important factor when comparing a variety against other standard varieties. If a sample would have consistently higher wheat mineral content, it would enhance the probability of having high flour ash. Low protein would not be desirous when comparing with standard varieties, because in a low protein crop year the probability of it having such a low protein as to be undesirable is very probable. Therefore, the protein must also be considered as a characteristic when comparing other varieties grown in the same locality.

Milling Performance is very important, especially the sub-category of milling characteristics. If low extractions or high flour ash are obtained, this becomes a major factor and is quite unacceptable from a commercial milling standpoint. All flour mineral contents are reported at a constant extraction of 65% so that the figures are directly comparable. As a rule of thumb, one can approximate that each point of ash (0.01%) is equivalent to approximately 2% in extraction.

Milling characteristics are important. A sample which tends to be soft in character requires a different milling technique to be milled properly. On commercial mills flowed for hard vitreous spring wheats, soft milling characteristics cause great difficulty. Therefore, if a sample shows softness in character, it is considered to be unsatisfactory. Likewise, a sample which is extremely hard and vitreous will cause difficulty. Both types of wheat (soft and vitreous) require different roll pressures, clothing, sifter surface, and temper to be milled properly. If these wheats are blended with normal milling wheats, improper results are obtained since these characteristics are not necessarily compatible or additive. Normal to soft score indicates that the sample shows a tendency toward softness of character on the flour mill stocks and extraction. This would indicate that the sample may give some difficulty for certain mill streams and an adjustment would either have to be made in the milling flow, or in tempering procedures to compensate for these differences. The properties of this wheat may or may not be compatible with other wheats with which it may be blended, therefore, it is important to maintain varieties with as uniform milling characteristics as possible.

The amount of protein recovered in the flour for a sample is of importance. The high protein wheats yielding low protein flours are not desirable. Such a wheat would have much of the protein distributed in the outer portion of the kernel which would result in excessive protein in the feed. Therefore, higher protein in the wheat would be necessary to yield a flour of comparable protein to a wheat which gives good flour protein recovery.

Mixogram Patterns and Farinogram Patterns are important in estimating the strength and mixing tolerance or potential mixing tolerance of a flour. A long flat curve is more desirable than a short peaked curve; however, an extremely long curve may be undesirable, if the flour would require excessive mixing for proper development. The pattern of the curve is of importance as well as the length, and both must be considered. An abnormal curve, such as a sway-back or long initial time to incorporate the water, indicate undesirable characteristics.

Baking Evaluation takes into account the flour absorption, mixing time, dough characteristics, loaf volume, and machinability. A sample which has low absorption would be unsatisfactory, compared to other spring wheats with normal absorption. A sample with extremely short mixing time would also be considered undesirable as a good strong spring wheat. When a sample is in the minimal range for these values, it is considered as questionable until further testing demonstrates whether a definite deficiency exists.

Doughs having mellow to weak dough properties show a tendency towards weakness. Also, for mellow to strong, the dough is mellow but has a tendency to be strong, and a strong to mellow dough is just the reverse. Since these characteristics are subjective rather than objective, it is necessary at times to estimate the tendency; therefore, the necessity exists for apparent double grades.

The grain or appearance of the interior of the loaf shows how well the sample stood up during baking and may point out or explain some deficiencies which have been observed during the baking test.

Loaf volume indicates potential strength of the flour in a different manner than mixing time or dough characteristics, in that it shows the ability or lack thereof for the dough to expand under pressure and to contain the entrapped gases during this expansion. Weak flours act much like rotten balloons which burst when blown up and collapse, thus yielding low loaf volume or extremely large volume and large holes in the interior of the loaf. Low protein flours and lifeless (dead) doughs exhibit the properties similar to putty and do not expand during fermentation or baking and give low loaf volume. Tough and very bucky doughs are bound too tight and impede expansion of the gases causing low loaf volume.

General Evaluation rating applies only to the data contained in the year of the report. A new category, The Prospect of a selection, will apply to two or more years of data. The Prospect is given for each selection which has been tested for at least two crop years. This evaluation takes into account the various grading factors and the results of the crop years in an effort to determine if the selection should be considered as a prospective new variety. The main defects and outstanding features are discussed. A selection which is promising should be continued. Those which show some promise with outstanding agronomic characteristics should be seriously considered and looked at in large plots, if it has not been previously, providing other sufficient information has been obtained. A sample which shows little or no promise should be discontinued.

FIELD PLOT NURSERY SAMPLES - 1972 CROP

Fifty-two samples were received from the Dickinson and Williston, North Dakota stations. Nineteen samples were the named varieties which have been released: Bonanza, Bounty 208, Canthatch, Chris, Crim, Era, Fortuna, Fortuna (Bearded), Justin, Lark (WS 1651-E), Manitou, Napayo, Nordak, Polk, Selkirk, Thatcher, Waldron, and WS 1809. Eleven were the experimental selections: North Dakota selections ND 491, ND 497 (Olaf), ND 499, ND 506, ND 507, ND 509, ND 510, ND 511, ND 515, and Sawfly S 686 and S 6662. The results for each variety and selection are given in Table 1.

The average results of the 1972 data are given in Table 2. The average results of the varieties, Chris, Justin, and Selkirk, for each of the individual stations where grown, were used as a standard for the other selections from that station. In the 1972 Field Plot Nursery samples the experimental selections, in some cases, were given low evaluations because of erratic results from one station to the next.

The averages of General Evaluation, the number of total deficiencies and the number of major deficiencies are given after each variety or selection in parenthesis -- (Average General Evaluation - #Total Deficiencies/#Major Deficiencies). The varieties grown this year may be broadly classified as follows:

Bonanza (1.0 - 7/4) - No Promise

Bounty 208 (2.0 - 9/4) - Little Promise

*Canthatch (1.0 - 3/1) - No Promise

Chris (3.5 - 5/1) - Good Promise

*Crim (2.0 - 3/0) - Little Promise

Era (1.0 - 8/5) - No Promise

Fortuna (2.5 - 5/3) - Little Promise

*Fortuna (Bearded) (4.0 - 1/0) - Good Promise

Justin (3.0 - 3/0) - Some Promise

Lark (WS 1651-E) (2.0 - 9/4) - Little Promise

Manitou (2.5 - 4/1) - Some Promise

Napayo (1.5 - 7/1) - Little Promise

Nordak (2.0 - 4/1) - Little Promise

Polk (3.5 - 2/0) - Good Promise

*Selkirk (1.0 - 3/2) - No Promise

*Thatcher (1.0 - 5/2) - No Promise

Waldron (1.0 - 8/4) - No Promise

WS 1809 (2.0 - 5/2) - Little Promise

* One station only

ND 491 (2.0 - 8/2)

Kernel Characteristics - Satisfactory to Questionable. Erratic wheat mineral content.

Milling Performance - Questionable. Low extraction and large protein spread from wheat to flour.

Baking Evaluation - Questionable to Unsatisfactory. Erratic bake absorption and tendency toward weak doughs.

General Evaluation - This selection would show little promise as a new variety based on this year's crop.

The Prospect - Based on four crop years, this selection would show no promise as a new variety due to the milling performance which tended to be somewhat erratic, giving poor recovery from year to year and the poor dough characteristics which tend to be erratic from year to year.

ND 497 (Olaf) (2.0 - 5/2)

Kernel Characteristics - Questionable to Satisfactory. Low protein.

Milling Performance - Questionable. Tendency for low extraction with a large protein spread from wheat to flour.

Baking Evaluation - Questionable to Unsatisfactory. Low bake absorption and long mixing time with a tendency for poor dough handling properties.

General Evaluation - This selection would show little promise as a new variety based on this year's crop.

The Prospect - Based on three crop year's results, this selection would show no promise as a new variety, primarily because of poor milling characteristics, long mixing requirements, and poor dough characteristics.

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TO THE EDITOR:

I am writing to you regarding the recent publication of the article by [Name] in the [Journal] on the topic of [Topic]. I have read the article with great interest and find it to be a valuable contribution to the field. The authors have provided a thorough and detailed analysis of the problem at hand, and their conclusions are well-supported by the data presented.

I am particularly impressed by the clarity and organization of the paper. The authors have done an excellent job of presenting the material in a way that is both accessible and rigorous. The use of diagrams and tables is particularly helpful in illustrating the concepts discussed.

I am sure that this article will be of great value to the community of researchers in this field. I am looking forward to seeing the results of further research in this area.

Sincerely,
[Name]

Yours faithfully,
[Name]

ND 499 (2.0 - 6/2)

Kernel Characteristics - Questionable. Low protein.

Milling Performance - Very Satisfactory.

Baking Evaluation - Questionable to Unsatisfactory. Tendency for minimum absorption, erratic mixing time, and peculiar dough handling properties.

General Evaluation - This year's results show this selection to have little promise as a new variety.

The Prospect - Based on two crop years, this selection would show little promise as a new variety because of erratic results.

ND 506 (1.5 - 8/2)

Kernel Characteristics - Satisfactory to Questionable. Tendency toward high wheat mineral content.

Milling Performance - Questionable to Unsatisfactory. Low extraction and large protein spread from wheat to flour.

Baking Evaluation - Questionable to Unsatisfactory. Tendency toward low absorption and weak doughs.

General Evaluation - This year's results show this selection to have little promise as a new variety due primarily to low extraction and erratic baking properties.

ND 507 (1.0 - 9/5)

Kernel Characteristics - Satisfactory to Questionable. Tendency for high wheat ash.

Milling Performance - Unsatisfactory. Low extraction and high flour ash at 65% extraction.

Baking Evaluation - Questionable. Erratic bake absorption, mixing time, and dough handling properties.

General Evaluation - Based on this year's results, this selection shows no promise, primarily because of poor milling performance.

ND 509 (2.0 - 6/2)

Kernel Characteristics - Questionable to Satisfactory. Erratic wheat ash and tendency for low protein content.

Milling Performance - Satisfactory to Questionable. Tendency toward erratic results.

Baking Evaluation - Questionable to Unsatisfactory. Tendency toward low absorption, short mixing time, and weak doughs.

General Evaluation - This selection shows little promise as a new variety based on this year's crop because of some deficiencies in all categories.

ND 510 (1.0 - 8/4)

Kernel Characteristics - Questionable. Erratic wheat ash and a tendency for having low protein.

Milling Performance - Questionable. Tendency toward low extraction and erratic flour ash.

Baking Evaluation - Questionable to Unsatisfactory. Erratic bake absorption, mixing time, and dough handling properties.

General Evaluation - This selection shows no promise as a new variety based on this year's crop due to deficiencies in all categories.

ND 511 (1.5 - 7/2)

Kernel Characteristics - Questionable to Satisfactory. Erratic flour ash and protein content.

Milling Performance - Questionable to Unsatisfactory. Tendency toward low extraction, erratic flour ash, and large protein spread from wheat to flour.

Baking Evaluation - Questionable to Unsatisfactory. Erratic bake absorption, mixing time, and dough handling characteristics.

General Evaluation - Based on this year's results, this selection would show no promise as a new variety because of erratic results.

ND 515 (2.0 - 3/1)

Kernel Characteristics - Questionable. Low protein content.

ND 515 (Cont'd.)

Milling Performance - Satisfactory to Questionable. Tendency for low extraction.

Baking Evaluation - Questionable to Unsatisfactory. Tendency toward minimum absorption and weak doughs.

General Evaluation - Based on just one sample from this crop year, this selection would show little promise as a new variety.

S 686 (3.5 - 3/1)

Kernel Characteristics - Questionable. Low protein content.

Milling Performance - Questionable to Satisfactory. Large protein spread from wheat to flour under certain conditions.

Baking Evaluation - Satisfactory to Questionable. Tendency toward erratic doughs.

General Evaluation - Based on this year's crop, this selection would show little promise as a new variety because protein content is low.

S 6662 (3.5 - 2/0)

Kernel Characteristics - Satisfactory to Questionable. Minimum protein content.

Milling Performance - Very Satisfactory to Satisfactory.

Baking Evaluation - Satisfactory to Questionable. Variable mixing time.

General Evaluation - This selection would show some promise as a new variety based on this year's crop, although protein content is minimal.

The Prospect - Based on two crop years, this selection would show some promise as a new variety although protein content and dough handling properties are minimal.

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

PHYSICAL CHEMISTRY

LECTURE NOTES

BY

PROFESSOR

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UNIFORM REGIONAL NURSERY SAMPLES - 1972 CROP

A total of 421 Uniform Regional Nursery samples were received. The samples represented 15 stations from 6 states. No blends were made of the samples for this crop year due to the lack of compatibility and were milled as individual samples to eliminate any possible erroneous results. Thus a total of 421 samples were milled and baked. Twenty-eight samples were received from 14 of the stations, and 29 samples were received from the Carrington station. Twenty-two selections were included for quality evaluation in the Uniform Regional Nursery samples. The remainder of the samples were the commercially named varieties of: Chris, Era, Justin, Marquis, Selkirk, and Waldron.

Fifty-six samples were received from two Idaho stations: Aberdeen and Tetonia. Data for these samples are given in Table 3.

Fifty-six samples were received from two Minnesota stations: Crookston and St. Paul. Data for these samples are given in Table 4.

Eighty-four samples were received from three stations in Montana: Bozeman, Havre, and Sidney. Data for these samples are given in Tables 5 and 6.

One hundred and sixty-nine samples were received from six stations in North Dakota: Carrington, Dickinson, Fargo, Langdon, Minot, and Williston. The data for these samples are given in Tables 7 through 9. The samples from Carrington were grown on irrigated land.

Twenty-eight samples were received from Highmore, South Dakota. The data for these samples are given in Table 10.

Twenty-eight samples were received from Sheridan, Wyoming. The data for these samples are given in Table 11.

In Table 12 are given the average results for each of the twenty-eight samples submitted from 6 states and 15 stations. The results for kernel characteristics and milling performance were obtained by averaging the results from the 9 tables--3 through 11. The baking results were obtained from a blend of the flours in equal proportions from each of the stations for the respective variety or selection. The regular 100 g. straight dough rich formula baking procedure was used in baking the flour blends. The General Evaluation column includes the general overall performance of the blend of each sample. The General Evaluation given for the sample may not agree with that of the blend, since averages do not express the range and poor characteristics may be masked. In an endeavor to clarify this problem, the averages of General Evaluation, the number of total deficiencies and the number of major deficiencies are given after each variety or selection in parenthesis -- (Average General Evaluation - #Total Deficiencies/#Major Deficiencies).

For simplicity and brevity of the report, as in previous reports, each variety will be discussed from the general overall viewpoint rather than the individual stations. The general evaluation summarizes the results from the individual stations for one crop year. The evaluation is more meaningful for the overall performance of a variety or selection when at least two or more crop years are included. The data discussed under the category, The Prospect, includes two or more years.

In Table 13, the averages are given by states for the three varieties of Chris, Justin, and Selkirk. This table gives a comparison of the varieties by state, as well as state averages of the three varieties for comparative purposes, and the 1972 grand averages for the three varieties for comparison of the two crop years. In general, the 1972 crop had slightly better kernel characteristics (test weight, 1000 kernel weight, kernel size distribution) than last year with approximately 1% lower protein content. The milling was better this year showing a 1.7% higher flour extraction, and 2 points lower flour mineral content. The absorption was 1.3% less than last year. The mixing time was slightly longer than last year, as were the mixogram patterns. The dough characteristics were weaker. The crumb color and the crumb grain were somewhat poorer than last year. The loaf volume was approximately the same as last year.

The average results of the varieties, Chris, Justin, and Selkirk, for each of the individual stations, were used as a standard for the other selections from that station; therefore, a variety or selection may be rated satisfactory at two different stations, but comparison of the data may show much poorer results for one station due to adverse environmental conditions. Thus, in actuality, the sample with poor results could be rated as unsatisfactory quality wise when compared to the overall spring wheat area. The state averages in Table 13, are additional guides for the relative performance for the crop year by states.

By using a new format and employment of the computer, all named varieties receive a general evaluation. Only those varieties in the Good Promise category could be consistently considered as acceptable to the trade both in the domestic as well as foreign markets. However, in order to be brief, the varieties may be broadly classified as follows:

Chris (3.7 - 23/2) - Good Promise

Era (1.1 - 64/32) - No Promise

Justin (3.4 - 10/0) - Good Promise

Marquis (1.8 - 59/27) - No Promise

Selkirk (2.5 - 30/4) - Some Promise

Waldron (2.5 - 22/6) - Some Promise

The following table shows the results of the experiments conducted on the effect of temperature on the rate of reaction between hydrogen peroxide and potassium iodide.		The rate of reaction was measured by the volume of oxygen gas evolved in a given time.	
Temperature (°C)	Rate of reaction (cm ³ O ₂ / min)	Temperature (°C)	Rate of reaction (cm ³ O ₂ / min)
10	0.5	30	1.5
20	1.0	40	2.5
30	2.0	50	4.0
40	3.5	60	6.0
50	5.5	70	8.5
60	8.0	80	12.0
70	11.0	90	16.0
80	15.0	100	20.0

The results show that the rate of reaction increases with increasing temperature. This is because the molecules have more kinetic energy and are therefore more likely to collide with sufficient energy to overcome the activation energy barrier.

The following table shows the results of the experiments conducted on the effect of concentration on the rate of reaction between hydrogen peroxide and potassium iodide.

The rate of reaction was measured by the volume of oxygen gas evolved in a given time.		The concentration of hydrogen peroxide was varied while the concentration of potassium iodide was kept constant.	
Concentration of H ₂ O ₂ (mol/l)	Rate of reaction (cm ³ O ₂ / min)	Concentration of H ₂ O ₂ (mol/l)	Rate of reaction (cm ³ O ₂ / min)
0.1	0.5	0.4	2.0
0.2	1.0	0.5	2.5
0.3	1.5	0.6	3.0
0.4	2.0	0.7	3.5
0.5	2.5	0.8	4.0

The results show that the rate of reaction increases with increasing concentration of hydrogen peroxide. This is because there are more reactant molecules available to collide and react.

FB A-004 (1.5 - 40/20)

Kernel Characteristics - Questionable. Low Protein.

Milling Performance - Questionable. Tendency for high flour ash.

Baking Evaluation - Questionable to Unsatisfactory. Low absorption and a tendency toward weak doughs.

General Evaluation - This selection would show no promise as a new variety based on this crop year's results because of deficiencies in every category.

FB W-406 (1.3 - 52/17)

Kernel Characteristics - Questionable. Definite tendency toward low test weight and low protein.

Milling Performance - Questionable to Satisfactory. Tendency for low extraction.

Baking Evaluation - Questionable to Unsatisfactory. Long mixing time and tough doughs with a tendency toward minimum absorption.

General Evaluation - This selection would show no promise as a new variety because of deficiencies in all categories.

FB W-434 (2.1 - 33/8)

Kernel Characteristics - Satisfactory to Questionable. Tendency for low protein content.

Milling Performance - Questionable to Unsatisfactory. Low extraction with occasional high flour ash.

Baking Evaluation - Questionable. Tendency for minimum absorption and maximum mixing time, and shows tough dough characteristics.

General Evaluation - This crop year's results for this selection would indicate that it would have no promise as a new variety.

H 678-1-6-9 (1.8 - 46/12)

Kernel Characteristics - Questionable. Low protein and minimum test weight.

Milling Performance - Satisfactory to Questionable.

Baking Evaluation - Unsatisfactory to Questionable. Definite tendency toward minimum absorption, long mixing time, and tough doughs.

The first part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present. The author then proceeds to discuss the various factors that have shaped the development of the United States, including the role of the individual, the influence of the environment, and the impact of the government. The author concludes by stating that the study of the history of the United States is a task of great importance, and that it is one that should be undertaken by all who are interested in the future of the country.

The second part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present. The author then proceeds to discuss the various factors that have shaped the development of the United States, including the role of the individual, the influence of the environment, and the impact of the government. The author concludes by stating that the study of the history of the United States is a task of great importance, and that it is one that should be undertaken by all who are interested in the future of the country.

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H 678-1-6-9 (Cont'd.)

General Evaluation - This year's results for this selection would indicate no promise as a new variety primarily because of the low protein, the long mixing time, and tough doughs.

The Prospect - Based on two crop year's results, this selection would show no promise as a new variety, primarily because of poor baking characteristics of long mixing and too strong doughs.

H 689-5-5 (1.5 - 52/21)

Kernel Characteristics - Questionable. Minimum kernel size distribution and low protein.

Milling Performance - Very Satisfactory to Satisfactory.

Baking Evaluation - Unsatisfactory. Very low absorption and tendency toward weak doughs.

General Evaluation - Based on this crop year's results, this selection would show no promise as a new variety, primarily because of poor baking absorption.

II-64-27 (2.8 - 28/9)

Kernel Characteristics - Questionable to Satisfactory. Erratic protein content which is most often lower than in the standard varieties.

Milling Performance - Satisfactory to Questionable. Occasional low extraction with high flour ash.

Baking Evaluation - Questionable. Minimum absorption and erratic dough handling properties.

General Evaluation - Based on this crop year's results, this selection would show little promise as a new variety because of erratic results.

II-64-33 (2.5 - 33/10)

Kernel Characteristics - Questionable. Minimum test weight and low protein.

Milling Performance - Satisfactory to Questionable. Tendency toward low extraction.

Baking Evaluation - Questionable. Tendency for minimum absorption with weak doughs.



II-64-33 (Cont'd.)

General Evaluation - This selection would show little promise as a new variety based on this crop year's results.

MN 6601 (1.1 - 72/34)

Kernel Characteristics - Unsatisfactory. Minimum test weight, poor kernel size distribution, and low protein.

Milling Performance - Questionable. Tendency for minimum extraction with high flour ash.

Baking Evaluation - Questionable to Unsatisfactory. Tendency for low absorption with poor dough handling properties.

General Evaluation - Based on this crop year's results, this selection would show no promise as a new variety because of deficiencies in every category.

MT 7042 (1.3 - 65/37)

Kernel Characteristics - Unsatisfactory. Minimum 1000 kernel weight and kernel size distribution, and extremely low protein.

Milling Performance - Questionable to Unsatisfactory. Extremely low extraction with occasional high flour ash.

Baking Evaluation - Questionable to Unsatisfactory. Low absorption and weak doughs.

General Evaluation - This selection would show no promise in this year's crop because of deficiencies in every category.

MT 661718 (1.7 - 47/15)

Kernel Characteristics - Questionable to Satisfactory. Tendency for low protein.

Milling Performance - Satisfactory to Questionable. Low extraction.

Baking Evaluation - Questionable to Unsatisfactory. Tendency for low absorption with maximum mixing time, and erratic dough handling properties.

General Evaluation - Based on this year's crop, this selection would show no promise, primarily because of poor baking performance.



ND 491 (2.5 - 26/5)

Kernel Characteristics - Satisfactory.

Milling Performance - Questionable to Unsatisfactory. Low extraction and maximum flour ash at 65% extraction.

Baking Evaluation - Questionable to Satisfactory. Erratic dough handling properties with a tendency for weak doughs.

General Evaluation - Based on this year's crop, this selection would show little promise as a new variety.

The Prospect - Based on three crop years, this selection would show little promise as a new variety because of poor milling and baking characteristics.

ND 497 (Olaf) (2.6 - 36/6)

Kernel Characteristics - Satisfactory to Questionable. Tendency for low protein content.

Milling Performance - Questionable to Unsatisfactory. Erratic flour extraction with a tendency toward the low end, with a large protein spread from wheat to flour.

Baking Evaluation - Unsatisfactory to Questionable. Minimum absorption, long mixing time, and irregular dough handling properties.

General Evaluation - This selection would show no promise as a new variety based on this year's crop.

The Prospect - Based on two crop years, this selection would show no promise as a new variety because of deficiencies in all categories.

ND 499 (3.0 - 26/5)

Kernel Characteristics - Questionable to Satisfactory. Low protein content.

Milling Performance - Questionable to Satisfactory. Large protein spread from wheat to flour.

Baking Evaluation - Questionable to Unsatisfactory. Minimum absorption, and erratic dough handling properties with a tendency toward weak doughs.

General Evaluation - This selection would show some promise as a new variety based on this year's crop.



ND 499 (Cont'd.)

The Prospect - Based on three crop years, this selection would show little promise as a new variety. Two years ago it showed good promise and one year ago little promise. The primary variable appears to be dough handling properties which are not consistent from year to year. Also, the wheat protein content is low, accompanied by a large protein spread from wheat to flour.

ND 506 (2.5 -25/7)

Kernel Characteristics - Satisfactory. Tendency for minimum protein content.

Milling Performance - Questionable. Tendency to give low extraction, high flour ash, and large protein spread between wheat and flour.

Baking Evaluation - Questionable to Unsatisfactory. Erratic dough mixing properties as well as weak doughs.

General Evaluation - This selection would show little promise as a new variety based on this year's crop.

The Prospect - Based on two crop years, this selection would show little promise as a new variety, primarily because of its reversal in dough characteristics from strong doughs to a tendency toward weak doughs.

ND 507 (1.0 - 50/30)

Kernel Characteristics - Satisfactory. Tendency toward high wheat mineral content.

Milling Performance - Unsatisfactory. Extremely low extraction and a very high flour ash at 65% extraction.

Baking Evaluation - Satisfactory to Questionable. Shows weak doughs and a tendency for maximum mixing time.

General Evaluation - This selection would show no promise as a new variety based on this year's crop because of poor milling performance.

ND 508 (1.7 - 52/22)

Kernel Characteristics - Questionable to Unsatisfactory. Low protein content.

Milling Performance - Unsatisfactory to Questionable. Low extraction and high flour ash at 65% extraction.

ND 508 (Cont'd.)

Baking Evaluation - Unsatisfactory. Tendency toward minimum absorption and low loaf volume, and shows a maximum mixing time with very weak doughs.

General Evaluation - Based on this year's crop, this selection would show no promise because of deficiencies in all categories.

ND 509 (2.1 - 38/15)

Kernel Characteristics - Satisfactory.

Milling Performance - Questionable to Unsatisfactory. Tendency toward low extraction and high flour ash, and large protein spread from wheat to flour.

Baking Evaluation - Questionable to Unsatisfactory. Shows a tendency toward minimum absorption with short mixing time and weak doughs.

General Evaluation - This selection would show little promise as a new variety based on this year's crop primarily because of low extraction and weak doughs.

ND 510 (1.9 - 34/7)

Kernel Characteristics - Satisfactory to Questionable. Tendency toward low protein content.

Milling Performance - Questionable to Unsatisfactory. Low extraction and high flour ash.

Baking Evaluation - Satisfactory to Questionable. Tendency toward minimum absorption, maximum mixing time and erratic dough handling properties.

General Evaluation - Based on this year's crop, this selection would show little promise as a new variety primarily because of low flour extraction.

ND 511 (1.6 - 40/11)

Kernel Characteristics - Satisfactory. Tendency for high wheat ash.

Milling Performance - Unsatisfactory. Low extraction and high flour mineral content at 65% extraction.



ND 511 (Cont'd.)

Baking Evaluation - Questionable. Shows erratic dough properties with a greater tendency to be weak.

General Evaluation - This selection shows no promise as a new variety, primarily because of poor milling performance.

ND 515 (2.7 - 27/4)

Kernel Characteristics - Satisfactory. Occasional low protein.

Milling Performance - Questionable. Tendency for low extraction with high flour ash, and large wheat to flour protein spread.

Baking Evaluation - Questionable. Erratic dough handling properties.

General Evaluation - Based on this year's crop, this selection would show little promise as a new variety because of minimum milling and baking performance.

NK 70Y14 (1.2 - 37/9)

Kernel Characteristics - Questionable to Satisfactory. Shows low protein and minimum kernel size distribution.

Milling Performance - Satisfactory.

Baking Evaluation - Unsatisfactory. Extremely long mixing time with tough doughs.

General Evaluation - This selection would show no promise as a new variety based on this year's crop.

The Prospect - Based on two crop year's results, this selection would show no promise as a new variety, primarily due to low protein content, long mixing time, and tough doughs.

RL 4238 (2.5 - 37/9)

Kernel Characteristics - Questionable to Satisfactory. Shows minimum kernel size distribution and low kernel weight.

Milling Performance - Questionable to Satisfactory. Tendency toward minimum extraction and occasional high flour ash.

Baking Evaluation - Questionable. Tendency toward minimum absorption as well as having weak doughs.

General Evaluation - Based on this year's crop, this selection shows little promise as a new variety because of minimum overall performance.

SAWFLY YIELD NURSERY SAMPLES - 1972 CROP

Ninety samples were received from one station in Montana and three stations in North Dakota. Twenty-four samples were received from each of three North Dakota stations: Fargo, Minot, and Williston. Five of these samples were the named varieties: Chinook, Chris, Fortuna, Rescue, and Thatcher. Seventeen of the samples were the selections: CN 02601, CN 782846, CN 806840, CN 8067212, CN 8068215, MT 711, MT 7019, MT 7110, MT 7119, S 686, S 6662, S 6765, S 6851, S 6910, S 6912, S 6916, and S 6924. In addition, the selections MT 7042 and S 6677 were grown at Sidney, Montana. The data for these samples from the individual stations are given in Tables 14 through 16. In Table 17 are the averages for these data. Again, averages and blends may not reflect the range of response of a selection or variety to environmental conditions; therefore, averages of the General Evaluation, number of total deficiencies, and the number of major deficiencies are given as they were for the Field Plot series and the Uniform Regional Nursery series. The varieties of Chinook, Chris, Fortuna, Rescue, and Thatcher from each station were averaged for a standard of performance and results of the individual samples were compared to this average.

Chinook (3.5 - 1/1) - Good Promise

Chris (3.8 - 2/0) - Good Promise

Fortuna (4.0 - 0/0) - Good Promise

Rescue (2.8 - 11/3) - Some Promise

Thatcher (2.0 - 11/3) - Little Promise

CN 02601 (1.0 - 8/4)

Kernel Characteristics - Satisfactory.

Milling Performance - Unsatisfactory. Very high mineral content at 65% extraction.

Baking Evaluation - Questionable to Satisfactory. Maximum mixing time and erratic dough properties.

General Evaluation - This selection shows no promise as a new variety based on this year's crop due to a very high flour ash.



CN 782846 (3.0 - 7/0)

Kernel Characteristics - Satisfactory.

Milling Performance - Questionable to Satisfactory. Low flour extraction and tendency toward maximum flour ash.

Baking Evaluation - Questionable to Satisfactory. Tendency to have weak doughs.

General Evaluation - Based on this year's crop, this selection would show some promise as a new variety.

CN 806840 (2.3 - 18/7)

Kernel Characteristics - Questionable. Poor kernel size distribution and minimum protein, and tendency toward maximum wheat mineral content.

Milling Performance - Questionable to Satisfactory. Tendency toward low flour extraction.

Baking Evaluation - Questionable to Satisfactory. Tendency toward having weak doughs.

General Evaluation - Based on this year's crop, this selection would show little promise as a new variety primarily due to low flour extraction and poor kernel characteristics.

CN 8067212 (1.5 - 16/6)

Kernel Characteristics - Questionable to Unsatisfactory. Minimum kernel weight and size distribution, as well as low protein content.

Milling Performance - Satisfactory to Questionable. Tendency for low extraction, and large protein spread from wheat to flour.

Baking Evaluation - Unsatisfactory. Low bake absorption and minimum loaf volume, as well as showing weak doughs.

General Evaluation - This selection would show no promise based on this year's crop, due primarily to poor baking quality.

CN 8068215 (1.0 - 19/7)

Kernel Characteristics - Unsatisfactory. Poor kernel size distribution and tendency toward high wheat ash.

Milling Performance - Satisfactory to Questionable. Tendency toward minimum extraction and maximum flour ash.

CN 8068215 (Cont'd.)

Baking Evaluation - Questionable. Tendency for low absorption with erratic dough handling properties and maximum mixing time.

General Evaluation - Based on this year's crop, this selection would show no promise as a new variety because of poor kernel characteristics and minimum milling performance.

MT 711 (2.0 - 12/2)

Kernel Characteristics - Satisfactory to Questionable. Minimum kernel size distribution.

Milling Performance - Questionable. High mineral content at 65% extraction.

Baking Evaluation - Questionable to Unsatisfactory. Long mixing time and a tendency for having erratic dough handling properties.

General Evaluation - This selection would show little promise as a new variety based on this year's crop, primarily because of too long mixing time.

MT 7019 (1.0 - 25/11)

Kernel Characteristics - Unsatisfactory. Poor test weight and kernel size distribution, as well as low protein.

Milling Performance - Questionable to Unsatisfactory. Low extraction and high mineral content at 65% flour extraction.

Baking Evaluation - Questionable to Satisfactory. Tendency toward low absorption, maximum mixing time, and minimum dough handling properties.

General Evaluation - Based on this year's crop, this selection would show no promise as a new variety because of deficiencies in all categories.

MT 7042 (1.0 - 5/4) (Sidney, Montana only)

Kernel Characteristics - Unsatisfactory. Very low protein.

Milling Performance - Questionable to Satisfactory. Low flour extraction.

Baking Evaluation - Unsatisfactory. Low absorption and loaf volume, as well as poor dough handling properties.



MT 7042 (Cont'd.)

General Evaluation - Based on this year's crop, this selection would show no promise as a new variety, although this selection was grown at only one station.

MT 7110 (3.0 - 3/1)

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory to Questionable. Tendency for low flour extraction.

Baking Evaluation - Satisfactory to Questionable. Tendency for low absorption and weak doughs.

General Evaluation - This selection would show some promise as a new variety based on this year's crop, although flour extraction shows a tendency to be low.

MT 7119 (1.5 - 19/8)

Kernel Characteristics - Questionable to Unsatisfactory. Shows low test weight, poor kernel characteristics and low protein.

Milling Performance - Questionable. Tendency for low extraction and high flour ash.

Baking Evaluation - Questionable. Tendency toward minimum absorption and weak doughs.

General Evaluation - This selection would show no promise as a new variety based on this year's crop, because of deficiencies in all categories.

S 686 (3.3 - 1/1)

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory. Occasional high flour ash.

Baking Evaluation - Satisfactory.

General Evaluation - This selection would show some promise as a new variety based on this year's crop.

The Prospect - Based on two crop year's results, this selection shows good promise as a new variety.

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S 6662 (3.8 - 1/0)

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory.

General Evaluation - This selection shows good promise as a new variety.

The Prospect - Based on four crop year's results, this selection would show good promise as a new variety.

S 6677 (4.0 - 1/0) (Sidney, Montana only)

Kernel Characteristics - Satisfactory to Questionable. Tendency for high wheat mineral content.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory.

General Evaluation - This selection would show good promise as a new variety based on this year's crop results, although only grown at one station.

The Prospect - Based on two crop year's results, this selection would show good promise as a new variety.

S 6765 (1.8 - 7/3)

Kernel Characteristics - Satisfactory. Tendency toward minimum test weight.

Milling Performance - Unsatisfactory. Low flour extraction and occasional high flour ash.

Baking Evaluation - Satisfactory to Questionable. Tendency for having weak doughs.

General Evaluation - This selection would show no promise as a new variety based on this year's crop.

The Prospect - Based on three crop year's results, this selection would show no promise as a new variety, due to poor milling performance and minimum baking performance.

		1900		1901		1902		1903		1904		1905		1906		1907		1908		1909		1910		1911		1912		1913		1914		1915		1916		1917		1918		1919		1920		1921		1922		1923		1924		1925		1926		1927		1928		1929		1930		1931		1932		1933		1934		1935		1936		1937		1938		1939		1940		1941		1942		1943		1944		1945		1946		1947		1948		1949		1950		1951		1952		1953		1954		1955		1956		1957		1958		1959		1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971		1972		1973		1974		1975		1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		2037		2038		2039		2040		2041		2042		2043		2044		2045		2046		2047		2048		2049		2050		2051		2052		2053		2054		2055		2056		2057		2058		2059		2060		2061		2062		2063		2064		2065		2066		2067		2068		2069		2070		2071		2072		2073		2074		2075		2076		2077		2078		2079		2080		2081		2082		2083		2084		2085		2086		2087		2088		2089		2090		2091		2092		2093		2094		2095		2096		2097		2098		2099		2100		2101		2102		2103		2104		2105		2106		2107		2108		2109		2110		2111		2112		2113		2114		2115		2116		2117		2118		2119		2120		2121		2122		2123		2124		2125		2126		2127		2128		2129		2130		2131		2132		2133		2134		2135		2136		2137		2138		2139		2140		2141		2142		2143		2144		2145		2146		2147		2148		2149		2150		2151		2152		2153		2154		2155		2156		2157		2158		2159		2160		2161		2162		2163		2164		2165		2166		2167		2168		2169		2170		2171		2172		2173		2174		2175		2176		2177		2178		2179		2180		2181		2182		2183		2184		2185		2186		2187		2188		2189		2190		2191		2192		2193		2194		2195		2196		2197		2198		2199		2200		2201		2202		2203		2204		2205		2206		2207		2208		2209		2210		2211		2212		2213		2214		2215		2216		2217		2218		2219		2220		2221		2222		2223		2224		2225		2226		2227		2228		2229		2230		2231		2232		2233		2234		2235		2236		2237		2238		2239		2240		2241		2242		2243		2244		2245		2246		2247		2248		2249		2250		2251		2252		2253		2254		2255		2256		2257		2258		2259		2260		2261		2262		2263		2264		2265		2266		2267		2268		2269		2270		2271		2272		2273		2274		2275		2276		2277		2278		2279		2280		2281		2282		2283		2284		2285		2286		2287		2288		2289		2290		2291		2292		2293		2294		2295		2296		2297		2298		2299		2300		2301		2302		2303		2304		2305		2306		2307		2308		2309		2310		2311		2312		2313		2314		2315		2316		2317		2318		2319		2320		2321		2322		2323		2324		2325		2326		2327		2328		2329		2330		2331		2332		2333		2334		2335		2336		2337		2338		2339		2340		2341		2342		2343		2344		2345		2346		2347		2348		2349		2350		2351		2352		2353		2354		2355		2356		2357		2358		2359		2360		2361		2362		2363		2364		2365		2366		2367		2368		2369		2370		2371		2372		2373		2374		2375		2376		2377		2378		2379		2380		2381		2382		2383		2384		2385		2386		2387		2388		2389		2390		2391		2392		2393		2394		2395		2396		2397		2398		2399		2400		2401		2402		2403		2404		2405		2406		2407		2408		2409		2410		2411		2412		2413		2414		2415		2416		2417		2418		2419		2420		2421		2422		2423		2424		2425		2426		2427		2428		2429		2430		2431		2432		2433		2434		2435		2436		2437		2438		2439		2440		2441		2442		2443		2444		2445		2446		2447		2448		2449		2450		2451		2452		2453		2454		2455		2456		2457		2458		2459		2460		2461		2462		2463		2464		2465		2466		2467		2468		2469		2470		2471		2472		2473		2474		2475		2476		2477		2478		2479		2480		2481		2482		2483		2484		2485		2486		2487		2488		2489		2490		2491		2492		2493		2494		2495		2496		2497		2498		2499		2500		2501		2502		2503		2504		2505		2506		2507		2508		2509		2510		2511		2512		2513		2514		2515		2516		2517		2518		2519		2520		2521		2522		2523		2524		2525		2526		2527		2528		2529		2530		2531		2532		2533		2534		2535		2536		2537		2538		2539		2540		2541		2542		2543		2544		2545		2546		2547		2548		2549		2550		2551		2552		2553		2554		2555		2556		2557		2558		2559		2560		2561		2562		2563		2564		2565		2566		2567		2568		2569		2570		2571		2572		2573		2574		2575		2576		2577		2578		2579		2580		2581		2582		2583		2584		2585		2586		2587		2588		2589		2590		2591		2592		2593		2594		2595		2596		2597		2598		2599		2600		2601		2602		2603		2604		2605		2606		2607		2608		2609		2610		2611		2612		2613		2614		2615		2616		2617		2618		2619		2620		2621		2622		2623		2624		2625		2626		2627		2628		2629		2630		2631		2632		2633		2634		2635		2636		2637		2638		2639		2640		2641		2642		2643		2644		2645		2646		2647		2648		2649		2650		2651		2652		2653		2654		2655		2656		2657		2658		2659		2660		2661		2662		2663		2664		2665		2666		2667		2668		2669		2670		2671		2672		2673		2674		2675		2676		2677		2678		2679		2680		2681		2682		2683		2684		2685		2686		2687		2688		2689		2690		2691		2692		2693		2694		2695		2696		2697		2698		2699		2700		2701		2702		2703		2704		2705		2706		2707		2708		2709		2710		2711		2712		2713		2714		2715		2716		2717		2718		2719		2720		2721		2722		2723		2724		2725		2726		2727		2728		2729		2730		2731		2732		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S 6851 (3.3 - 4/0)

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory. Minimum extraction.

Baking Evaluation - Questionable to Satisfactory. Erratic dough handling properties.

General Evaluation - This selection would show some promise as a new variety based on this year's crop.

The Prospect - Based on two crop year's results, this selection would show some promise as a new variety although flour extraction is minimal.

S 6910 (3.0 - 6/1)

Kernel Characteristics - Satisfactory. Tendency toward minimum test weight and protein content.

Milling Performance - Satisfactory to Questionable. Tendency for low extraction.

Baking Evaluation - Satisfactory to Questionable. Tendency for weak dough and maximum mixing time.

General Evaluation - This selection shows some promise as a new variety.

S 6912 (3.0 - 5/0)

Kernel Characteristics - Satisfactory to Questionable. Tendency for low protein.

Milling Performance - Questionable. Low extraction.

Baking Evaluation - Questionable to Satisfactory. Tendency for weak doughs.

General Evaluation - This selection would show some promise as a new variety based on this year's crop.

S 6916 (2.5 - 9/0)

Kernel Characteristics - Questionable. Low protein.

Milling Performance - Questionable. Low extraction.



S 6916 (Cont'd.)

Baking Evaluation - Questionable. Shows weak doughs and tendency for minimum loaf volume.

General Evaluation - Based on this year's results, this selection would show little promise as a new variety because of deficiencies in all categories.

S 6924 (1.8 - 7/3)

Kernel Characteristics - Satisfactory. Tendency for minimum protein.

Milling Performance - Satisfactory.

Baking Evaluation - Unsatisfactory. Tendency for minimum bake absorption, with weak doughs, and low loaf volume.

General Evaluation - Based on this year's crop results, this selection would show no promise as a new variety, due primarily to poor baking performance.



VARIETY OR SEL. NO.	T.W. #/BU.	1000 KWT.	KESEL LG	SELE 4	HT. 22	HT. 22	MHT. 22	MHT. 22	PRO. 22	KERN. 37	EXT. 37	FLR. 37	FLR. 37	MLG. 37	MLG. 37	MIX. 37	MIX. 37	BAKE 37	MIX. 37	DOUGH 37	CRUMBS 37	CRUMBS 37	LOAF 37	BAKE 37	GEN. 37	MINOR 37	MAJOR 37	DEFICIENCY 37			
WICKINSUN, NORTH DAKOTA																															
BONANZA	61.7	29.1	13	84	3	1.56	12.9	8	66.7	0.34	12.2	1	2	57.8	4	59.0	3	101.8	3	101.8	92.99	900	8	1	LG	00		MP	8A		
BOUNTY 208	52.5	30.3	30	67	3	1.59	12.7	8	66.1	0.32	11.3	2	1	58.3	5	59.0	5	102.0	5	102.0	86.05	880	8	1	MT	00		MP	8A		
CHRIS	59.9	25.4	13	34	3	1.74	14.2	5	66.2	0.39	13.3	1	2	60.7	2	61.7	2	101.5	2	101.5	92.99	915	4	3	LG	MP	OU		MP	8A	
ERA	62.1	29.7	31	66	3	1.58	12.0	8	67.8	0.40	11.3	1	2	59.0	2	60.3	2	102.5	4	102.5	87.10	880	8	1	BA	00		MP	8A		
FORTUNA	60.2	36.4	47	50	3	1.67	14.4	3	66.6	0.39	13.4	1	2	59.7	2	60.9	2	102.5	4	102.5	87.09	895	7	2	BA	00		MP	8A		
JUSTIN	58.2	27.0	31	67	2	1.27	16.0	2	66.2	0.40	13.8	1	3	61.9	3	63.0	3	103.0	2	103.0	90.99	950	4	3	DU	00		MP	8A		
LARK	62.0	29.2	16	81	3	1.73	13.0	8	67.1	0.36	12.2	1	2	59.0	5	60.1	5	102.0	3	102.0	88.09	890	8	1	MT	00		MP	8A		
MANITOU	60.3	26.5	18	79	3	1.74	14.5	4	65.5	0.40	13.6	2	3	59.7	2	60.8	2	101.6	6	101.6	85.09	875	7	2	BA	MP	LV		MP	8A	
NAPAYO	63.4	26.5	17	78	3	1.69	14.3	5	65.4	0.40	13.5	2	3	60.7	2	62.1	2	102.5	4	102.5	82.07	830	8	1	SM	MP	LV		MP	8A	
NOROK	60.7	33.7	41	56	3	1.73	13.0	5	65.9	0.41	12.4	1	3	62.3	4	63.5	4	102.5	4	102.5	85.05	900	5	2	MP	00		MP	8A		
POLK	62.7	35.8	50	48	2	1.64	14.3	4	68.2	0.38	13.4	1	1	62.3	3	63.5	3	102.0	3	102.0	86.09	1000	4	3	MP	00		MP	8A		
WALDRON	58.0	28.8	40	57	3	1.93	16.3	3	68.2	0.45	14.7	2	8	64.7	3	66.0	3	101.5	3	101.5	88.99	980	3	1	EX	MP		MP	8A		
MS 1809	60.5	27.9	38	58	4	1.51	13.6	5	66.0	0.36	12.7	1	2	62.3	3	63.6	3	101.5	3	101.5	88.09	940	4	3	MP	EX	M65	DO		MP	8A
NO 491	58.2	30.0	50	51	4	1.87	16.0	3	68.3	0.37	14.6	2	2	64.2	3	65.7	3	101.0	3	101.0	88.09	995	3	3	MP	EX	M65	DO		MP	8A
NO 497	60.6	32.6	48	49	3	1.72	13.9	5	64.9	0.36	12.7	2	2	60.7	4	62.2	4	102.5	3	102.5	86.09	875	4	3	MP	00		MP	8A		
NO 499	60.5	31.0	44	51	3	1.70	13.9	5	69.2	0.34	12.8	1	1	62.5	3	63.6	3	101.0	3	101.0	87.09	950	4	3	SM	MP	00		MP	8A	
NO 506	59.0	28.7	41	54	3	1.91	16.0	3	62.9	0.42	14.4	2	6	62.8	2	64.2	2	102.0	3	102.0	89.99	940	4	2	SM	EX	M65	DO		MP	8A
NO 507	59.6	31.2	47	50	3	1.95	16.0	3	62.1	0.43	15.1	2	8	65.3	3	67.1	3	103.0	3	103.0	80.07	995	4	1	DU	MP		MP	8A		
NO 509	59.9	30.1	44	51	5	1.86	14.9	3	65.3	0.41	13.8	2	3	61.9	2	63.3	2	101.0	3	101.0	86.09	865	8	1	SM	MP	EX	DO		MP	8A
NO 510	59.1	30.1	35	59	5	1.86	14.9	3	62.8	0.44	13.7	2	8	61.9	2	63.5	2	101.0	3	101.0	88.99	900	4	1	SM	MP	EX	DO		MP	8A
NO 511	60.6	30.4	42	54	4	1.67	13.4	3	65.0	0.43	14.3	1	5	62.8	2	64.2	2	101.0	3	101.0	86.99	920	4	2	MP	M65	00		MP	8A	
S 666	60.8	33.2	42	54	4	1.64	13.8	5	68.9	0.41	13.0	1	1	61.9	2	63.3	2	102.0	3	102.0	88.99	900	5	3	MP	00		MP	8A		
S 6662	61.2	33.2	41	57	2	1.66	14.1	4	68.5	0.31	13.3	1	1	61.9	2	63.3	2	102.0	3	102.0	87.09	900	4	3	MP	00		MP	8A		
WILLISTON, NORTH DAKOTA																															
BONANZA	63.3	29.4	15	84	1	1.28	13.1	6	66.6	0.24	12.3	2	1	58.3	4	60.0	4	101.8	3	101.8	88.09	905	8	1	LG	SM	MP		MP	8A	
BOUNTY 208	54.0	30.2	22	76	2	1.26	13.6	1	67.3	0.22	12.3	2	1	59.0	6	60.3	6	102.0	4	102.0	87.05	890	6	3	LG	SM	MP	DO		MP	8A
CANTHATCH	62.6	27.2	26	73	1	1.28	14.1	3	67.8	0.29	12.8	1	2	56.3	2	57.7	2	101.7	4	101.7	86.05	895	8	1	KW	DU		MP	8A		
CHRIS	62.9	26.9	11	88	1	1.33	14.6	4	66.8	0.32	13.5	1	3	60.0	2	61.5	2	100.7	3	100.7	89.99	920	2	4	KW	DU		MP	8A		
ERA	62.4	31.9	50	48	2	1.37	14.6	3	64.9	0.33	13.1	2	5	60.7	4	62.1	4	101.0	3	101.0	85.05	890	4	2	SM	M65	00		MP	8A	
FORTUNA	63.9	30.6	36	62	2	1.27	12.5	8	69.2	0.30	11.7	1	2	57.0	3	58.2	3	101.0	4	101.0	89.99	865	8	1	SM	DU		MP	8A		
JUSTIN	63.2	37.2	60	39	1	1.26	12.9	4	70.4	0.27	12.3	1	1	59.0	2	60.2	2	101.5	3	101.5	87.09	860	9	3	MP	DU		MP	8A		
LARK	62.0	31.1	51	48	1	1.53	15.3	3	67.1	0.30	14.1	1	2	64.4	4	65.9	4	100.5	3	100.5	87.09	920	4	3	MP	DU		MP	8A		
MANITOU	63.9	28.6	12	86	2	1.20	13.8	6	67.1	0.27	12.4	2	2	60.3	6	61.7	6	101.0	4	101.0	89.09	865	5	3	SM	MP	MT	00		MP	8A
NAPAYO	61.9	27.8	65	34	1	1.40	14.3	2	66.9	0.32	13.1	1	3	61.0	3	62.5	3	102.5	4	102.5	84.07	855	4	3	KW	DU		MP	8A		
NOROK	62.1	28.7	30	69	1	1.35	14.7	3	65.6	0.33	13.1	2	4	59.7	2	61.0	2	101.5	4	101.5	87.09	890	5	2	M65	BA	DU		MP	8A	
POLK	63.1	34.2	43	56	1	1.37	14.4	2	64.9	0.33	12.6	2	5	62.5	4	63.8	4	101.7	4	101.7	88.09	860	4	2	M65	BA	DU		MP	8A	
SELKIRK	63.2	35.2	60	39	1	1.41	14.6	2	67.5	0.31	13.1	1	2	61.9	5	63.8	5	101.0	3	101.0	87.05	945	2	4	MP	DU		MP	8A		
THATCHER	61.1	33.8	47	52	1	1.35	13.8	4	68.3	0.31	12.8	1	2	58.3	2	59.9	2	100.7	3	100.7	88.99	825	8	1	MP	DU		MP	8A		
WALDRON	62.0	28.3	27	72	1	1.38	14.0	7	66.1	0.33	12.1	1	4	57.5	2	59.1	2	101.5	5	101.5	88.99	830	8	1	KW	M65	PU		MP	8A	
MS 1809	62.4	34.0	60	39	1	1.41	14.9	2	64.9	0.33	12.5	1	1	58.1	3	60.0	3	102.5	4	102.5	87.09	860	8	1	M65	DU		MP	8A		
NO 491	63.4	28.8	38	60	2	1.16	13.9	4	68.7	0.29	13.5	1	1	57.8	3	59.3	3	103.0	5	103.0	85.09	855	8	1	EX	PU		MP	8A		
NO 497	62.7	33.0	63	36	1	1.41	14.4	2	64.2	0.30	12.2	2	5	56.7	2	58.0	2	101.0	3	101.0	87.09	880	8	1	PO	DU		MP	8A		
NO 499	62.3	34.4	56	43	1	1.31	14.3	2	66.3	0.27	12.4	2	2	57.0	8	58.6	8	101.0	5	101.0	87.09	880	8	1	MP	DU		MP	8A		
NO 506	63.0	35.3	44	35	1	1.32	13.8	4	67.9	0.25	12.8	1	1	58.7	3	60.1	3	100.0	6	100.0	86.09	850	8	1	MP	DU		MP	8A		
NO 507	63.0	34.4	66	33	1	1.37	14.2	2	64.6	0.29	12.4	2	3	58.1	3	60.0	3	102.5	6	102.5	80.05	900	8	1	EX	DU	</				



VARIETY OR SEL. NO.	T.W. #/BU.	1000 KWT.	KERNEL SIZE			WHT. MIN.	WHT. PRO.	KERN. CHAR.	FLR. EXT.	FLR. MIN.	FLR. 3 EX.	MLG. PHD.	MLG. CHAR.	MLG. PER.	MIX. ABS.	MIX. PAT.	BAKE TIME	MIX. TIME	DOUGH CHAR.	CRUMB COLOR	CRUMB GRAIN	LOAF	BAKE GEN.	MINOR DEFICIENCY	MAJOR DEFICIENCY
			G.	3	3	2	2	3	4	2	2	3	4	3	2	2	3	4	3	4	3	4	3	4	
STATE AVERAGES FOR NORTH DAKOTA																									
CHRIS	61.4	26.1	12	86	2	1.53	16.4	4	66.5	0.35	13.4	1	3	60.3	2	61.6	2.37	3	101.1	91.4	91.8	2	4	KW	MoS
JUSTIN	60.1	29.0	41	57	2	1.54	15.6	2	66.6	0.34	14.4	1	3	63.1	4	66.4	2.87	2	100.3	90.0	90.0	4	3	OO	
SELKIRK	61.1	33.8	47	52	1	1.34	13.8	4	68.3	0.30	12.8	1	1	58.3	2	59.9	2.50	5	100.7	88.9	82.5	8	1	WP	
CROP YEAR AVERAGES																									
1971 AVERAGE	61.4	33.4	49	49	2	1.58	14.2	2	64.7	0.35	13.4	2	3	62.3	3	62.0	2.90	4	100.1	89.3	86.8	2	4		
1972 AVERAGE	61.8	31.2	41	57	2	1.50	16.1	2	66.4	0.33	12.9	1	2	63.3	3	61.7	2.80	4	101.5	87.0	89.4	2	4		
1/ CLEAN DRY - SUBTRACT 1 LB./BU. FOR DOCKAGE-FREE T.W.																									
2/ 1% MOISTURE BASIS.																									
3/ 1 = VERY SATISFACTORY, 2 = SATISFACTORY, 3 = QUESTIONABLE, 4 = QUESTIONABLE-QUESTIONABLE, 5 = QUESTIONABLE-UNSATISFACTORY, 6 = UNSATISFACTORY-QUESTIONABLE, 7 = UNSATISFACTORY-UNSATISFACTORY.																									
4/ 1 = VERY SATISFACTORY, 2 = SATISFACTORY, 3 = QUESTIONABLE, 4 = QUESTIONABLE-QUESTIONABLE, 5 = QUESTIONABLE-UNSATISFACTORY, 6 = UNSATISFACTORY-QUESTIONABLE, 7 = UNSATISFACTORY-UNSATISFACTORY.																									
5/ 1 = VERY SATISFACTORY, 2 = SATISFACTORY, 3 = QUESTIONABLE, 4 = QUESTIONABLE-QUESTIONABLE, 5 = QUESTIONABLE-UNSATISFACTORY, 6 = UNSATISFACTORY-QUESTIONABLE, 7 = UNSATISFACTORY-UNSATISFACTORY.																									
6/ 1 = VERY SATISFACTORY, 2 = SATISFACTORY, 3 = QUESTIONABLE, 4 = QUESTIONABLE-QUESTIONABLE, 5 = QUESTIONABLE-UNSATISFACTORY, 6 = UNSATISFACTORY-QUESTIONABLE, 7 = UNSATISFACTORY-UNSATISFACTORY.																									
7/ 1 = VERY SATISFACTORY, 2 = SATISFACTORY, 3 = QUESTIONABLE, 4 = QUESTIONABLE-QUESTIONABLE, 5 = QUESTIONABLE-UNSATISFACTORY, 6 = UNSATISFACTORY-QUESTIONABLE, 7 = UNSATISFACTORY-UNSATISFACTORY.																									
8/ 1 = VERY SATISFACTORY, 2 = SATISFACTORY, 3 = QUESTIONABLE, 4 = QUESTIONABLE-QUESTIONABLE, 5 = QUESTIONABLE-UNSATISFACTORY, 6 = UNSATISFACTORY-QUESTIONABLE, 7 = UNSATISFACTORY-UNSATISFACTORY.																									
9/ 1 = NO PROMISE, 2 = LITTLE PROMISE, 3 = SOME PROMISE, 4 = GOOD PROMISE.																									
ONE STATION ONLY																									
10/																									





TABLE 4

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

1972 CRUP

VARIETY OR SEL. NO.	T-W #/BU.	1000 KMT.	LQ G.	REBEL SM.	WHT. MIN.	WHT. MAX.	KERN. CHAR.	FLR. EXT.	MIN. 3	FLR. EXT.	PRU. CHAR.	MLG. PERK.	MLG. PERK.	MIX. ABS.	MIX. ABS.	BAKE ABS.	MIX. TIME	MOCH CHAR.	CRUMB COLOR	CRUMB GRAIN	LOAF VOL.	BAKE EVAL.	GEN. EVAL.	MINOR DEFICIENCY			MAJOR DEFICIENCY				
CRUDSTUN, MINNESOTA																															
CHLIS	64-0	40-6	25	74	2	1-70	14-5	3	63-8	0-45	14-4	1	2	62-5	2	62-5	2-75	4	102-0	90-70	184	2	4	MP	M65	BA	SM	OU	KM	LG	
ERA	64-0	40-3	21	74	5	1-65	12-2	2	62-4	0-52	14-7	1	4	59-7	4	59-7	4-00	4	102-7	84-09	173	2	4								
JUSTIN	62-0	30-4	60	49	1	1-62	12-4	2	62-4	0-51	14-9	2	3	62-8	4	62-8	4-00	4	101-0	87-05	167	2	4								
MARQUIS	59-0	20-1	8	95	7	1-78	12-4	4	57-9	0-46	12-2	1	8	60-0	3	60-0	3-00	6	100-5	90-01	167	2	4	KM	LG	SM	MP	EX	M65	BA	
SELKIRK	60-0	30-5	48	49	3	1-60	13-7	5	65-4	0-46	13-5	1	2	61-9	3	61-9	3-00	6	98-2	88-01	171	4	3								
MALORON	61-5	34-5	55	44	1	1-87	15-1	2	63-7	0-47	14-6	1	3	62-5	3	62-5	2-75	4	99-2	89-99	180	2	4								
FB H-4004	61-5	35-2	45	54	1	1-88	14-2	2	62-3	0-51	13-9	2	8	61-9	4	61-9	4-00	3	100-0	89-99	173	2	1	M65							
FB H-4006	60-5	35-7	35	62	3	1-70	14-3	3	62-8	0-45	14-0	2	3	61-9	4	61-9	4-00	3	100-0	89-99	187	4	3								
FB H-4034	61-5	34-4	43	54	3	1-85	14-0	2	61-7	0-47	14-5	2	4	63-5	8	63-5	6-00	3	100-0	89-99	182	5	2								
H 678-1-6-9	61-5	34-0	47	51	2	1-74	14-0	2	62-9	0-43	13-6	2	2	62-6	5	62-6	4-75	3	101-0	86-05	205	4	3	MT							
H 689-5-5	62-5	31-9	31	67	2	1-74	13-9	4	60-7	0-41	13-4	1	1	64-4	7	64-4	6-50	4	102-6	88-10	182	8	1								
II-64-27	64-0	33-6	51	47	2	1-77	13-4	1	63-3	0-46	13-0	1	3	60-3	2	60-3	4-00	6	100-7	86-09	181	7	2								
II-64-33	62-0	34-8	61	38	1	1-77	13-4	5	63-6	0-46	12-9	1	3	62-5	5	62-5	4-50	6	101-6	86-09	180	4	3	MP							
MN 6601	60-0	23-6	3	91	6	1-74	14-1	8	62-6	0-51	13-6	1	6	62-2	3	62-2	3-00	6	97-0	89-10	182	4	1								
MT 7042	61-5	26-1	10	37	3	1-69	12-0	8	60-0	0-52	11-5	2	8	62-3	3	62-3	3-25	6	99-0	89-99	176	4	1								
MT 601718	61-0	31-3	32	66	2	1-72	12-8	6	61-5	0-44	12-7	2	3	59-7	5	59-7	4-50	6	100-0	89-99	171	8	1	MP							
NO 491	62-0	36-9	67	32	1	1-85	14-5	2	61-9	0-48	14-0	2	5	63-5	4	63-5	4-25	5	101-0	89-09	183	2	3								
NO 497	62-0	36-1	56	47	1	1-89	14-4	2	62-5	0-42	13-6	1	4	61-9	5	61-9	4-25	4	100-0	88-09	185	2	4								
NO 506	62-5	36-4	62	30	1	1-88	14-6	2	63-2	0-43	13-3	1	2	63-6	4	63-6	3-00	6	100-7	88-10	177	4	3	M65							
NO 507	61-5	34-8	62	36	2	1-86	12-7	2	60-9	0-56	14-6	1	8	62-0	4	62-0	4-25	5	99-0	88-10	177	2	1								
NO 508	62-0	36-2	53	45	2	1-86	12-7	8	60-7	0-49	12-6	2	6	62-8	4	62-8	4-50	5	100-0	86-10	162	5	1								
NO 509	62-5	35-2	60	37	3	1-67	14-5	2	63-3	0-50	14-1	1	5	62-8	3	62-8	2-50	5	100-0	84-09	192	2	3	M65							
NO 510	61-5	35-0	51	46	1	1-88	14-7	2	61-2	0-51	14-1	2	8	62-5	5	62-5	4-00	4	101-0	80-07	188	2	1								
NO 511	62-5	33-6	53	46	1	1-83	14-3	2	61-5	0-50	14-0	2	6	61-9	3	61-9	2-75	6	100-7	88-99	175	4	2								
NO 515	62-0	34-4	53	46	1	1-85	14-4	2	62-1	0-50	13-7	1	5	62-8	4	62-8	3-25	5	102-7	88-70	180	2	3	M65							
NK 7014	63-0	35-1	46	72	2	1-73	14-4	4	63-1	0-46	13-6	1	8	62-3	3	62-3	3-00	6	104-6	85-09	207	4	1								
RL 4230	62-0	26-5	16	82	2	1-73	14-4	4	64-2	0-51	13-7	1	8	62-3	3	62-3	3-00	6	104-6	87-99	171	4	1								
ST. PAUL, MINNESOTA																															
CHLIS	59-0	26-0	17	78	5	1-93	16-5	3	65-2	0-53	15-9	1	3	62-3	2	62-3	2-75	5	100-7	91-70	188	2	4	MP							
ERA	59-0	28-1	19	75	6	1-82	13-4	8	67-7	0-52	12-4	1	2	57-5	2	57-5	4-00	6	100-5	89-99	176	8	1								
JUSTIN	58-0	20-8	25	71	4	1-97	16-7	2	64-2	0-50	16-0	1	3	62-5	5	62-5	4-75	4	100-5	88-10	182	4	3								
MARQUIS	53-5	21-1	42	82	16	2-06	13-0	8	61-2	0-61	12-4	1	8	58-3	2	58-3	3-00	6	101-5	90-99	170	8	1	TM							
SELKIRK	50-5	24-1	41	56	3	1-93	15-5	4	60-4	0-51	14-5	1	2	62-6	2	62-6	3-00	6	99-2	87-01	176	4	3								
MALORON	58-5	32-8	49	58	3	1-90	16-1	2	60-0	0-49	15-0	1	2	63-2	3	63-2	3-25	4	99-0	89-99	194	4	3								
FB H-4004	27-0	32-6	44	52	3	1-97	15-7	2	60-1	0-58	14-3	1	4	62-8	3	62-8	3-25	5	99-2	87-05	184	2	1	EX							
FB H-4006	26-0	34-0	42	55	3	1-95	16-9	3	59-1	0-50	15-3	2	8	62-8	3	62-8	3-25	4	98-0	85-05	195	4	1								
FB H-4034	25-0	32-9	48	59	3	2-00	16-7	3	59-0	0-59	15-4	1	8	61-6	3	61-6	3-25	5	98-0	84-09	189	2	1								
H 678-1-6-9	57-0	33-4	43	54	3	1-87	14-0	8	63-7	0-45	13-4	1	2	61-3	6	61-3	4-75	3	100-0	84-09	212	6	1	MP							
H 689-5-5	57-0	28-2	5	89	9	2-19	15-3	8	65-4	0-56	14-4	1	4	58-7	2	58-7	2-75	6	100-5	87-01	165	8	1								
II-64-27	61-0	31-1	49	48	3	1-95	14-4	5	64-5	0-49	13-5	1	2	60-3	4	60-3	4-50	4	99-0	88-99	189	6	2								
II-64-33	57-0	30-8	37	58	5	1-94	14-6	6	62-3	0-50	13-7	1	3	61-3	4	61-3	3-25	6	100-5	89-99	169	6	2	MP							



QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

[illegible]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	12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TABLE 6

[illegible]

CLEAN DRY - SUBTRACT 1 LB./80. FOR DOCKAGE-FREE T.M.
1% MOISTURE BASIS.

1/ VERY SATISFACTORY, 2 = SATISFACTORY, 3 = QUESTIONABLE-QUESTIONABLE, 4 = QUESTIONABLE-SATISFACTORY, 5 = QUESTIONABLE, 6 = QUESTIONABLE-UNSATISFACTORY, 7 = UNSATISFACTORY-QUESTIONABLE, 8 = UNSATISFACTORY.

2/ GRAIN CONDITION

3/ REFER TO REFERENCE MIXGRAMS

4/ 1 = VERY STRONG
5/ 1 = VERY WEAK - 11 = VERY STRONG

6/ 1 = RUCKY, 2 = VERY ELASTIC, 3 = ELASTIC, 4 = ELASTIC-PLIABLE, 5 = PLIABLE, 6 = WEAK-P LIABLE, 7 = WEAK, 8 = WEAK-P LIABLE, 9 = MEAN, 10 = VERY WEAK, 20 = SLIGHTLY DEAD, 30 = DEAD.

7/ XXX-9 = BRIGHT WHITE, XXX-8 = WHITE, XXX-7 = SLIGHT CREAMY, XXX-6 = BRIGHT CREAMY, XXX-5 = CREAMY, XXX-4 = VERY CREAMY, XXX-3 = GRAY, XXX-2 = DULL GRAY, XXX-1 = VERY GRAY.

8/ THIS CALL ON WASH BOXES

9/ XXX-90 = SUGAR, XXX-80 = IRREGULAR, XXX-70 = OPEN, XXX-60 = OPEN, XXX-50 = OPEN, XXX-40 = OPEN, XXX-30 = OPEN, XXX-20 = OPEN, XXX-10 = IRREGULAR, XXX-07 = IRREGULAR, OPEN, XXX-09 = OPEN, XXX-10 = IRREGULAR, XXX-30 = SLIGHTLY UPEN, IRREGULAR, XXX-50 = SUGAR, XXX-60 = IRREGULAR, XXX-70 = OPEN, XXX-80 = IRREGULAR, XXX-90 = SUGAR.

10/ 1 = NO PROMISE, 2 = LITTLE PROMISE, 3 = SOME PROMISE, 4 = GOOD PROMISE.

9/ 1 = NO PROMISE, 2 = LITTLE PROMISE, 3 = SOME PROMISE, 4 = GOOD PROMISE.



QUALITY DATA UN UNIFORM REGIONAL NURSERY SAMPLES

[illegible]



TABLE 8

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

1972 CROP

VARIETY OR SEL. NO.	7-W. 1/	1000 KWT.	G.	KERNEL SIZE LG MED SM	WHT. MIN.	WHT. PRO.	UHT. PRO.	KERN. CHAR.	FLR. EXT.	FLR. MIN.	FLR. 65EX.	MLG. CHAM.	MLG. PER.	MIX. ABS.	MIX. PAT.	BAKE ABS.	MIX. TIME	DOUGH CHAR.	CRUMB COLOR	CRUMB GRAIN	LOAF BAKE VOL.	GEN. EVAL.	MINOR DEFICIENCY	MAJOR DEFICIENCY
	8/80.																							
FARGO, NORTH DAKOTA																								
CHRIS	60-0	28-9	14	83	3	1-78	15-4	3	65-4	0-43	15-2	1	2	61-9	2	61-9	2-50	4	98-2	92-99	181	2	4	LG
ERA	59-0	29-9	13	82	5	1-72	13-1	7	66-8	0-52	12-7	1	8	59-1	4	59-7	4-50	5	100-5	90-99	177	4	1	MP
JUSTIN	60-5	32-9	41	57	2	1-81	15-5	2	64-3	0-44	14-6	1	3	62-5	6	62-5	5-50	3	98-2	90-99	178	4	3	OD
MARQUIS	60-0	27-6	6	89	5	1-77	14-5	8	62-4	0-48	14-0	1	6	62-3	2	62-3	2-75	7	100-4	95-01	167	5	1	KM
SELKIRK	59-0	31-8	22	75	3	1-84	14-9	3	65-7	0-46	14-3	1	3	62-5	4	62-5	3-75	6	99-2	85-01	176	4	3	MP
MALORIN	60-0	30-6	38	60	2	1-80	14-9	2	64-7	0-46	14-2	1	3	60-3	4	60-3	4-25	4	100-5	99-01	173	5	2	BA
F8 A-004	60-0	32-3	29	68	3	1-78	14-4	4	64-0	0-46	13-3	1	3	59-7	5	59-7	5-00	4	99-2	92-99	181	8	1	MP
F8 M-006	57-5	30-8	28	69	3	1-59	14-9	3	62-0	0-45	14-0	1	5	61-0	11	61-0	9-75	3	99-0	90-90	189	8	1	MP
F8 M-34	59-5	33-8	30	67	3	1-73	15-4	2	62-7	0-44	13-2	1	2	61-9	6	61-9	8-00	3	99-0	86-05	194	6	2	MP
H 678-1-6-9	60-5	31-2	21	76	3	1-71	13-8	6	64-6	0-44	13-2	1	2	61-6	8	61-6	6-00	3	102-0	83-05	200	8	1	MP
H 689-5-5	60-5	30-8	16	82	2	1-82	14-0	5	67-9	0-40	13-4	1	1	57-8	2	57-8	3-00	6	101-6	90-01	170	8	1	LG
11-64-27	61-5	33-1	43	55	2	1-74	14-3	3	65-4	0-41	13-1	1	2	60-3	6	60-3	5-50	3	100-0	90-90	198	2	2	BA
11-64-33	59-5	32-1	38	59	3	1-69	14-2	5	64-5	0-46	13-7	1	3	61-6	4	61-6	4-00	4	100-5	87-09	183	2	4	MP
MN 6601	56-0	22-9	2	91	7	1-67	15-0	8	64-4	0-45	14-2	1	3	61-6	4	61-6	5-00	3	99-2	88-99	189	4	1	SM
M7 7042	59-5	28-7	18	79	3	1-63	12-7	8	62-3	0-49	11-8	1	6	61-3	5	61-3	4-25	5	98-2	89-99	190	4	1	KM
M7 661718	59-5	29-3	23	74	3	1-72	14-8	3	62-1	0-45	14-3	1	4	62-5	5	62-5	5-25	3	99-0	88-90	193	4	2	EX
MD 491	61-0	34-7	53	45	2	1-91	15-1	3	64-5	0-45	14-1	1	3	62-8	5	62-8	4-50	3	100-0	99-01	180	3	3	EX
MD 497	59-5	34-6	49	49	2	1-74	14-6	3	64-0	0-42	13-6	1	2	60-7	9	60-7	5-00	4	99-0	88-99	190	5	3	BA
MD 500	60-0	35-3	60	39	1	1-97	14-7	3	65-0	0-42	13-7	1	2	63-2	5	63-2	4-25	6	99-0	90-90	183	2	4	MP
MD 507	61-0	36-1	69	29	2	1-84	15-4	2	61-2	0-53	14-6	1	8	64-2	5	64-2	5-00	6	97-0	90-99	182	4	1	OD
MD 508	60-0	32-5	40	57	3	1-76	14-7	3	62-4	0-47	13-5	1	5	62-5	6	62-5	5-25	6	96-0	90-99	174	4	2	EX
MD 509	61-5	34-7	49	49	2	1-85	14-8	2	65-4	0-49	13-8	1	5	62-3	3	62-3	3-25	6	99-2	99-01	184	4	2	OD
MD 510	57-0	29-2	19	78	3	1-81	15-0	4	61-0	0-48	13-9	1	7	61-3	7	61-3	5-25	6	99-0	88-99	174	4	1	7N
MD 511	61-0	32-3	43	56	1	1-92	14-8	2	62-3	0-49	14-4	1	6	62-8	4	62-8	3-75	6	98-0	89-99	179	4	2	M65
MD 515	59-0	32-3	28	70	2	1-80	14-5	4	64-3	0-46	13-6	1	3	62-8	4	62-8	4-75	6	100-7	88-70	180	4	3	MP
MN 70714	60-5	30-1	10	85	3	1-64	14-5	5	66-2	0-42	13-8	1	1	63-5	9	63-5	10-75	3	101-0	88-70	194	8	1	KM
RL 4238	60-0	27-8	12	85	3	1-73	14-9	3	65-1	0-43	14-4	1	2	62-8	9	62-8	4-00	4	101-7	89-70	178	4	3	LG
LANGDON, NORTH DAKOTA																								
CHRIS	63-0	32-8	51	48	1	1-45	14-7	3	67-4	0-39	14-3	1	3	63-8	4	63-8	3-00	4	101-0	90-90	184	2	4	KM
ERA	63-0	36-8	61	37	2	1-46	12-3	8	70-2	0-41	11-6	1	3	60-7	3	60-7	4-00	5	99-0	89-70	187	5	1	MP
JUSTIN	63-0	39-8	74	25	1	1-58	14-8	2	66-8	0-38	14-6	1	3	63-2	4	63-2	4-00	3	99-0	90-99	178	4	3	OD
MARQUIS	63-0	36-5	59	39	2	1-57	13-3	5	65-9	0-40	12-8	1	4	61-0	2	61-0	2-75	6	100-5	86-01	174	7	1	MP
SELKIRK	61-0	39-7	63	35	2	1-53	13-9	4	69-2	0-38	13-6	1	2	61-3	2	61-3	3-00	6	99-0	86-99	178	6	2	BA
MALORIN	62-0	41-5	75	24	1	1-52	14-6	2	67-0	0-40	13-9	1	3	62-5	3	62-5	3-25	5	100-0	87-09	198	3	3	M65
F8 A-004	62-0	42-7	74	24	1	1-52	14-0	2	66-0	0-49	12-8	1	4	60-7	8	60-7	3-25	5	101-7	86-01	174	4	3	MP
F8 M-006	60-5	41-3	64	33	3	1-85	14-6	8	66-8	0-41	13-8	1	4	62-3	8	62-3	6-75	3	100-0	87-99	192	8	1	TH
F8 M-34	63-0	44-6	75	23	1	1-44	14-3	2	65-6	0-39	13-5	1	4	61-6	4	61-6	4-00	4	99-0	87-99	186	4	2	BA
H 678-1-6-9	63-0	40-5	70	29	1	1-39	13-8	3	66-7	0-38	13-5	1	3	62-5	7	62-5	6-75	3	100-0	95-05	212	8	1	OD
H 689-5-5	61-0	35-6	41	58	1	1-58	13-9	5	68-5	0-39	13-3	1	3	59-7	2	59-7	3-25	4	101-5	86-09	180	8	1	LG
11-64-27	63-5	38-2	70	29	1	1-63	12-4	8	65-3	0-42	11-9	1	6	60-0	5	60-0	5-50	5	101-5	88-99	181	8	1	MP
11-64-33	61-0	40-5	71	27	2	1-55	13-6	5	64-8	0-43	13-0	1	8	61-6	3	61-6	3-50	5	100-5	90-99	181	4	1	MP
MN 6601	61-0	38-0	51	36	3	1-66	13-9	6	65-0	0-42	13-6	1	6	61-6	3	61-6	3-00	6	100-5	99-99	177	6	1	SM
M7 7042	62-0	37-0	59	39	2	1-62	12-6	6	62-0	0-44	12-6	2	8	61-0	3	61-0	3-50	5	101-8	88-10	193	5	1	BA
MD 661718	63-0	37-0	71	28	1	1-39	14-1	5	65-9	0-37	12-9	1	2	61-0	4	61-0	4-25	4	101-8	89-90	189	4	3	BA
MD 491	63-0	41-0	79	19	2	1-51	14-6	2	64-2	0-40	13-9	1	6	62-5	3	62-5	3-50	3	99-0	89-90	191	4	2	EX
MD 497	62-0	42-9	77	22	1	1-46	14-3	2	63-9	0-38	13-8	1	5	62-5	5	62-5	4-25	4	101-0	88-05	196	2	3	MP
MD 499	62-5	45-8	77	21	2	1-45	13-6	4	66-4	0-36	13-4	1	2	62-5	3	62-5	3-50	5	99-0	89-99	192	3	3	M65
MD 506	63-0	41-8	77	21	2	1-60	14-5	2	65-4	0-41	13-7	1	5	62-3	3	62-3	3-50	5	100-0	86-07	193	3	3	MP
MD 507	61-5	40-8	77	22	1	1-64	15-1	3	62-1	0-48	14-9	1	8	66-3	4	66-3	3-50	3	99-0	86-10	188	4	1	MP
MD 508	62-5	42-0	70	28	2	1-68	11-9	8	64-2	0-42	11-2	1	7	61-0	5	61-0	5-00	20	99-0	89-99	162	8	1	EX
MD 509	62-5	41-5	76	21	3	1-50	14-6	3	66-5	0-39	13-8	1	5	62-5	2	62-5	2-75	7	100-7	99-09	190	5	2	MP
MD 510	62-5	40-8	71	28	1	1-55	14-5	3	64-9	0-40	13-9	1	5	61-9	4	61-9	4-00</							

1972 CRUP

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70 1 = VERY DISSATISFACTORY, 2 = SATISFACTORY--QUESTIONABLE, 3 = SATISFACTORY, 4 = SATISFACTORY--SATISFACTORY, 5 = QUESTIONABLE--SATISFACTORY, 6 = QUESTIONABLE--INSATISFACTORY, 7 = INSATISFACTORY--QUESTIONABLE, 8 = UNSATISFACTORY,
71 9 = HORRIBLE CHOICE.
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REFER TO REFERENCE NIXAMGRAS FOR NUMERICAL CURVE PATTERN. XXX-11 = VERY WEAK, XXX-12 = VERY STRONG
1 = 8UCKY, 2 = VERY ELASTIC, 3 = ELASTIC, 4 = PLIABLE-ELASTIC, 5 = PLIABLE, 6 = PLIABLE-ELASTIC, 7 = PLIABLE-WEAK, 8 = WEAK-PLIABLE, 9 = WEAK, 10 = VERY WEAK, 20 = SLIGHTLY DEAD, 30 = DEAD.
XXX-9 = BRIGHT WHITE, XXX-8 = WHITE, XXX-7 = SLIGHTLY CREAMY, XXX-5 = CREAMY, XXX-4 = VERY CREAMY, XXX-3 = GRAY, XXX-2 = DULL GRAY, XXX-1 = VERY GRAY.
XXX-100 = SOGGY, XXX-01 = THICK WALL OR HARSH, XXX-03 = CLOSE, XXX-05 = OPEN, IRREGULAR, XXX-06 = OPEN SLIGHTLY IRREGULAR, XXX-07 = IRREGULAR-OPEN, XXX-09 = OPEN, XXX-10 = IRREGULAR, XXX-30 = SLIGHTLY IRREGULAR-OPEN, XXX-70 = SLIGHTLY OPEN, XXX-90 = SLIGHTLY IRREGULAR, XXX-99 = NORMAL.
1 = NO PROMISE, 2 = LITTLE PROMISE, 3 = SOME PROMISE, 4 = GOOD PROMISE.

QUALITY DATA ON UNIFORM REGIONAL WORKING SAMPLES

[illegible][illegible]

QUALITY DATA ON UNIFORM REGIONAL JURYKEY SAMPLES

[illegible]

TABLE 12

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

1972 CROP

VARIETY OR SEL. NO.	T.W. #/80.	1000 KWT.	KG MED	SM	WHT. MIN.	WHT. PRO.	KERN. PRO.	FLR. EXT.	FLR. MIN.	FLR. PRO.	MLG. CHAR.	MLG. PER.	MIX. ADS.	MIX. PAT.	BAKE ABS.	MIX. TIME	CRUMB COLOR	CRUMB GRAIN	LOAF VOL.	BAKE EVAL.	GEN. EVAL.	MAJOR DEFICIENCY	
QUALITY DATA FOR UNIFORM BLENDS - REGULAR MIX																							
CHRIS	60-8	29-5	28	70	2	1-60	15-0	4	65-0	0-43	14-6	1	3	02-9	3	02-9	3	101-0	88-10	920	2	4	KL LG
ERA	61-6	30-9	32	64	4	1-54	12-8	4	67-7	0-43	11-9	1	3	02-7	3	02-7	3	101-0	87-01	915	8	1	MP
JUSTIN	60-7	33-8	48	50	2	1-68	15-1	2	64-3	0-42	14-6	1	3	02-2	4	02-2	4	101-0	91-99	925	4	3	DU
MARQUIS	60-1	30-7	32	64	4	1-65	14-1	4	63-2	0-42	13-6	1	3	01-9	2	01-9	2	101-0	83-99	945	4	2	MP
SELKIRK	58-9	34-9	46	51	3	1-64	14-4	3	66-4	0-43	13-9	1	2	01-9	2	01-9	2	102-0	86-99	945	6	2	BA DU
WALDRON	60-1	35-1	56	42	2	1-67	13-1	2	64-6	0-45	14-4	1	3	01-6	3	02-5	4	100-0	83-99	980	4	3	MP
F8 A-004	60-6	36-7	59	39	2	1-62	13-8	2	64-7	0-42	12-9	1	3	00-0	3	00-9	3	101-0	84-99	940	8	1	MP
F8 W-406	59-3	36-9	48	49	3	1-61	14-4	2	64-3	0-41	13-7	1	2	01-9	2	02-8	5	102-0	80-05	1000	7	2	BA
F8 W-434	60-4	38-2	57	41	2	1-60	14-7	2	63-3	0-43	13-9	1	4	01-7	3	01-6	3	101-0	89-99	965	5	2	BA
H 678-1-6-9	59-8	34-5	48	50	2	1-55	13-8	5	64-5	0-40	13-3	1	2	02-6	5	03-4	2	102-0	84-05	1000	6	2	MP
M 689-5-5	60-8	31-0	20	78	2	1-64	14-1	4	66-7	0-40	13-6	1	1	02-7	2	00-6	3	101-0	90-99	950	8	1	LG
11-64-27	62-3	34-8	57	41	2	1-64	14-2	3	64-5	0-41	13-6	1	2	01-9	4	02-6	3	102-0	86-07	990	4	3	BA
11-64-33	59-6	34-7	54	44	2	1-59	14-1	4	64-2	0-43	13-5	1	3	02-3	3	02-5	3	101-0	90-99	965	2	4	MP
MN 6601	59-4	25-8	12	63	5	1-56	14-0	6	64-4	0-44	13-4	1	3	02-0	2	02-0	2	100-0	89-99	930	6	1	KL
MT 7042	60-8	31-1	30	67	3	1-54	12-7	8	61-8	0-43	12-1	2	5	00-7	2	01-7	2	100-0	89-99	925	7	1	MP
MT 66178	60-3	33-5	50	48	2	1-61	14-0	4	63-0	0-41	13-5	1	3	00-3	4	01-0	3	102-0	87-10	995	8	1	MP
NU 491	60-6	35-9	60	38	2	1-67	14-9	2	62-9	0-44	14-1	1	4	01-9	3	02-8	3	103-0	87-09	980	4	2	BA
ND 497	60-9	37-3	59	39	2	1-61	14-4	2	63-7	0-38	13-5	1	2	03-6	3	04-4	3	103-0	86-09	965	2	4	MP
ND 499	61-2	37-7	64	34	2	1-59	14-0	4	64-9	0-38	13-1	1	2	03-2	3	03-9	3	103-0	84-07	970	2	4	MP
ND 506	60-7	36-9	66	52	2	1-68	14-7	2	63-2	0-43	13-9	1	4	02-2	4	03-2	4	103-0	86-05	980	2	3	MP
ND 507	59-7	34-6	58	40	2	1-73	15-1	2	60-5	0-51	14-7	2	8	07-3	6	08-4	6	101-0	87-99	1010	2	1	EX
ND 508	60-3	36-4	52	46	2	1-61	14-0	4	62-3	0-46	13-2	1	9	04-2	4	02-1	4	102-0	87-99	900	4	2	MP
ND 509	60-2	36-0	60	37	3	1-66	14-9	2	63-9	0-45	14-0	1	4	02-6	2	03-8	2	101-0	86-99	900	8	1	MP
ND 510	59-7	35-4	52	46	2	1-63	14-5	2	62-6	0-45	13-8	1	5	03-5	4	04-5	4	102-0	87-99	965	2	3	EX
ND 511	61-0	34-2	49	49	2	1-69	14-9	2	62-8	0-46	14-4	1	5	04-2	4	05-2	4	102-0	89-99	940	2	3	MP
ND 515	59-9	34-7	52	46	2	1-65	14-8	2	63-6	0-44	13-9	1	3	04-2	4	04-9	3	103-0	89-99	945	2	4	MP
NK 7014	61-2	35-2	41	56	3	1-57	14-3	3	65-2	0-41	13-7	1	2	02-0	7	05-6	7	104-0	88-10	950	8	1	MT
RL 4238	60-1	30-2	32	65	3	1-59	14-9	3	64-3	0-43	14-3	1	3	02-5	3	03-2	3	102-0	87-99	980	8	1	MP
CLEAN ORY - SUBTRACT 1 LB./80. FOR UUCKAGE-FREE T.W.																							

1/ CLEAN DRY - SUBTRACT 1 LB./BU. FOR UNUSABLE FREE T.W.

2/ 1 = VERY SATISFACTORY, 2 = SATISFACTORY, 3 = SATISFACTORY-QUESTIONABLE, 4 = QUESTIONABLE-UNSATISFACTORY, 5 = UNSATISFACTORY-UNSATISFACTORY, 6 = UNSATISFACTORY-UNSATISFACTORY.

3/ 1 = NORMAL, 2 = NORMAL-SOFT, 3 = SOFT-NORMAL, 4 = SOFT, 5 = CRITTY, 6 = WEAK, 7 = VERY STRONG.

4/ REFER TO REFERENCE MIXOGRAMS FOR NUMERICAL CURVE PATTERNS. 11 = VERY WEAK, 12 = WEAK, 13 = PLIABLE-WEAK, 14 = WEAK-PLIABLE, 15 = WEAK, 16 = VERY WEAK, 17 = VERY WEAK, 18 = VERY WEAK, 19 = VERY WEAK, 20 = VERY WEAK, 21 = VERY WEAK, 22 = VERY WEAK, 23 = VERY WEAK, 24 = VERY WEAK, 25 = VERY WEAK, 26 = VERY WEAK, 27 = VERY WEAK, 28 = VERY WEAK, 29 = VERY WEAK, 30 = VERY WEAK.

5/ 1 = BUCKY, 2 = VERY ELASTIC, 3 = ELASTIC-PLIABLE, 4 = PLIABLE-ELASTIC, 5 = PLIABLE, 6 = PLIABLE, 7 = PLIABLE, 8 = PLIABLE, 9 = PLIABLE, 10 = PLIABLE, 11 = PLIABLE, 12 = PLIABLE, 13 = PLIABLE, 14 = PLIABLE, 15 = PLIABLE, 16 = PLIABLE, 17 = PLIABLE, 18 = PLIABLE, 19 = PLIABLE, 20 = PLIABLE, 21 = PLIABLE, 22 = PLIABLE, 23 = PLIABLE, 24 = PLIABLE, 25 = PLIABLE, 26 = PLIABLE, 27 = PLIABLE, 28 = PLIABLE, 29 = PLIABLE, 30 = PLIABLE.

6/ XXX-9 = BRIGHT WHITE, XXX-8 = WHITE, XXX-7 = SLIGHTLY CREAMY, XXX-6 = CREAMY, XXX-5 = VERY CREAMY, XXX-4 = VERY CREAMY, XXX-3 = GRAY, XXX-2 = DULL GRAY, XXX-1 = VERY GRAY.

7/ XXX-0 = SOGGY, XXX-01 = THICK MALL OR HARSH, XXX-02 = CLOSE, XXX-03 = OPEN, XXX-04 = OPEN, XXX-05 = OPEN, XXX-06 = OPEN, XXX-07 = OPEN, XXX-08 = OPEN, XXX-09 = OPEN, XXX-10 = OPEN, XXX-11 = OPEN, XXX-12 = OPEN, XXX-13 = OPEN, XXX-14 = OPEN, XXX-15 = OPEN, XXX-16 = OPEN, XXX-17 = OPEN, XXX-18 = OPEN, XXX-19 = OPEN, XXX-20 = OPEN, XXX-21 = OPEN, XXX-22 = OPEN, XXX-23 = OPEN, XXX-24 = OPEN, XXX-25 = OPEN, XXX-26 = OPEN, XXX-27 = OPEN, XXX-28 = OPEN, XXX-29 = OPEN, XXX-30 = OPEN, XXX-31 = OPEN, XXX-32 = OPEN, XXX-33 = OPEN, XXX-34 = OPEN, XXX-35 = OPEN, XXX-36 = OPEN, XXX-37 = OPEN, XXX-38 = OPEN, XXX-39 = OPEN, XXX-40 = OPEN, XXX-41 = OPEN, XXX-42 = OPEN, XXX-43 = OPEN, XXX-44 = OPEN, XXX-45 = OPEN, XXX-46 = OPEN, XXX-47 = OPEN, XXX-48 = OPEN, XXX-49 = OPEN, XXX-50 = OPEN, XXX-51 = OPEN, XXX-52 = OPEN, XXX-53 = OPEN, XXX-54 = OPEN, XXX-55 = OPEN, XXX-56 = OPEN, XXX-57 = OPEN, XXX-58 = OPEN, XXX-59 = OPEN, XXX-60 = OPEN, XXX-61 = OPEN, XXX-62 = OPEN, XXX-63 = OPEN, XXX-64 = OPEN, XXX-65 = OPEN, XXX-66 = OPEN, XXX-67 = OPEN, XXX-68 = OPEN, XXX-69 = OPEN, XXX-70 = OPEN, XXX-71 = OPEN, XXX-72 = OPEN, XXX-73 = OPEN, XXX-74 = OPEN, XXX-75 = OPEN, XXX-76 = OPEN, XXX-77 = OPEN, XXX-78 = OPEN, XXX-79 = OPEN, XXX-80 = OPEN, XXX-81 = OPEN, XXX-82 = OPEN, XXX-83 = OPEN, XXX-84 = OPEN, XXX-85 = OPEN, XXX-86 = OPEN, XXX-87 = OPEN, XXX-88 = OPEN, XXX-89 = OPEN, XXX-90 = OPEN, XXX-91 = OPEN, XXX-92 = OPEN, XXX-93 = OPEN, XXX-94 = OPEN, XXX-95 = OPEN, XXX-96 = OPEN, XXX-97 = OPEN, XXX-98 = OPEN, XXX-99 = OPEN, XXX-100 = OPEN, XXX-101 = OPEN, XXX-102 = OPEN, XXX-103 = OPEN, XXX-104 = OPEN, XXX-105 = OPEN, XXX-106 = OPEN, XXX-107 = OPEN, XXX-108 = OPEN, XXX-109 = OPEN, XXX-110 = OPEN, XXX-111 = OPEN, XXX-112 = OPEN, XXX-113 = OPEN, XXX-114 = OPEN, XXX-115 = OPEN, XXX-116 = OPEN, XXX-117 = OPEN, XXX-118 = OPEN, XXX-119 = OPEN, XXX-120 = OPEN, XXX-121 = OPEN, XXX-122 = OPEN, XXX-123 = OPEN, XXX-124 = OPEN, XXX-125 = OPEN, XXX-126 = OPEN, XXX-127 = OPEN, XXX-128 = OPEN, XXX-129 = OPEN, XXX-130 = OPEN, XXX-131 = OPEN, XXX-132 = OPEN, XXX-133 = OPEN, XXX-134 = OPEN, XXX-135 = OPEN, XXX-136 = OPEN, XXX-137 = OPEN, XXX-138 = OPEN, XXX-139 = OPEN, XXX-140 = OPEN, XXX-141 = OPEN, XXX-142 = OPEN, XXX-143 = OPEN, XXX-144 = OPEN, XXX-145 = OPEN, XXX-146 = OPEN, XXX-147 = OPEN, XXX-148 = OPEN, XXX-149 = OPEN, XXX-150 = OPEN, XXX-151 = OPEN, XXX-152 = OPEN, XXX-153 = OPEN, XXX-154 = OPEN, XXX-155 = OPEN, XXX-156 = OPEN, XXX-157 = OPEN, XXX-158 = OPEN, XXX-159 = OPEN, XXX-160 = OPEN, XXX-161 = OPEN, XXX-162 = OPEN, XXX-163 = OPEN, XXX-164 = OPEN, XXX-165 = OPEN, XXX-166 = OPEN, XXX-167 = OPEN, XXX-168 = OPEN, XXX-169 = OPEN, XXX-170 = OPEN, XXX-171 = OPEN, XXX-172 = OPEN, XXX-173 = OPEN, XXX-174 = OPEN, XXX-175 = OPEN, XXX-176 = OPEN, XXX-177 = OPEN, XXX-178 = OPEN, XXX-179 = OPEN, XXX-180 = OPEN, XXX-181 = OPEN, XXX-182 = OPEN, XXX-183 = OPEN, XXX-184 = OPEN, XXX-185 = OPEN, XXX-186 = OPEN, XXX-187 = OPEN, XXX-188 = OPEN, XXX-189 = OPEN, XXX-190 = OPEN, XXX-191 = OPEN, XXX-192 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1972 680P

VARIETY OR T.W. NO.	1000 KNT.	KERNEL SIZE L ^a W ^b S ^c	WHT. PRO.	WHT. CHRS.	KERN. EXT.	FIR. MIN. ^d	FIR. M ^e	PLO. M ^f	M ^g .	MIX. MIX.	BAKE ABS.	MIX. TIME	DUGH CHAM.	CROMB COLOR	CRUMB GRAIN	LOAD BAKE VOL.	GEN. EVAL.	MINOR DEFICIENCY	MAJOR DEFICIENCY
72	6	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
4/80.	5/80.	6/80.	7/80.	8/80.	9/80.	10/80.	11/80.	12/80.	13/80.	14/80.	15/80.	16/80.	17/80.	18/80.	19/80.	20/80.	21/80.	22/80.	23/80.
STATE AVERAGES FOR IOWA																			
CHRIS	61.3	31.7	40	59	1	1.63	13.8	3	65.0	0.43	13.6	1	2	60.6	3	60.6	3	60.6	3
JUSTIN	61.8	34.6	58	40	2	1.69	13.0	2	63.3	0.48	12.6	1	4	60.6	3	60.6	3	60.6	3
SELKIRK	59.0	36.1	58	40	2	1.66	13.2	3	66.3	0.44	13.0	1	2	59.5	3	59.5	3	59.5	3
STATE AVERAGES FOR MINNESOTA																			
CHRIS	61.0	28.3	21	75	4	1.81	15.5	3	64.5	0.48	15.1	1	3	62.4	2	62.4	2	62.4	2
JUSTIN	60.0	32.6	43	54	3	1.90	15.9	2	63.3	0.47	15.4	2	3	62.6	5	62.6	5	62.6	5
SELKIRK	58.3	35.3	45	52	3	1.86	14.6	4	65.9	0.48	14.0	1	2	62.3	3	62.3	3	62.3	3
STATE AVERAGES FOR MONTANA																			
CHRIS	60.8	29.8	30	69	1	1.45	14.7	3	63.9	0.42	14.3	1	3	61.9	2	61.9	2	61.9	2
JUSTIN	61.2	35.8	60	38	2	1.50	15.1	2	63.7	0.40	14.5	1	2	62.5	4	62.5	4	62.5	4
SELKIRK	58.8	36.5	54	45	1	1.51	14.2	3	65.6	0.41	13.7	1	2	59.2	2	59.2	2	59.2	2
STATE AVERAGES FOR NORTH DAKOTA																			
CHRIS	60.9	29.6	30	68	2	1.61	15.0	3	65.2	0.42	14.6	1	2	62.9	3	62.9	3	62.9	3
JUSTIN	60.5	33.7	51	47	2	1.73	15.3	2	64.1	0.41	14.7	1	3	62.7	4	62.7	4	62.7	4
SELKIRK	59.4	34.5	46	52	2	1.67	14.5	2	66.2	0.43	14.0	1	3	61.1	2	61.1	2	61.1	2
STATE AVERAGES FOR SOUTH DAKOTA																			
CHRIS	59.0	25.1	5	90	5	1.71	15.7	4	67.6	0.43	14.9	1	4	61.9	2	61.9	2	61.9	2
JUSTIN	60.0	30.0	18	79	3	1.69	15.8	2	68.8	0.39	14.9	1	2	61.9	5	61.9	5	61.9	5
SELKIRK	56.5	30.6	21	74	5	1.62	15.0	3	69.0	0.41	14.7	1	2	60.3	2	60.3	2	60.3	2
STATE AVERAGES FOR WYOMING																			
CHRIS	60.0	29.7	17	76	7	1.44	16.2	3	66.1	0.37	16.1	1	3	65.0	4	65.0	4	65.0	4
JUSTIN	60.0	33.4	21	70	9	1.42	16.4	2	66.5	0.35	16.2	1	2	65.7	3	65.7	3	65.7	3
SELKIRK	59.0	34.6	21	70	9	1.37	15.4	4	68.1	0.37	15.0	1	2	62.8	3	62.8	3	62.8	3
STATE AVERAGES OF THE THREE VARIETIES																			
IOWA	60.7	34.1	52	47	1	1.66	13.4	3	64.9	0.45	13.1	1	4	60.3	3	60.3	3	60.3	3
MINNESOTA	60.9	42.0	36	41	3	1.86	15.3	2	64.0	0.48	14.9	1	8	62.5	3	62.5	3	62.5	3
MONTANA	60.3	34.0	48	51	1	1.49	14.7	2	64.4	0.41	14.2	1	3	61.2	3	61.2	3	61.2	3
NORTH DAKOTA	60.3	32.6	42	56	2	1.67	14.9	2	65.2	0.42	14.4	1	2	62.3	3	62.3	3	62.3	3
SOUTH DAKOTA	58.5	28.6	15	81	4	1.68	15.5	4	68.5	0.41	14.8	1	2	61.4	3	61.4	3	61.4	3
WYOMING	59.7	32.6	20	72	8	1.41	16.0	3	66.9	0.37	15.8	1	1	64.5	4	64.5	4	64.5	4
CROP YEAR AVERAGE																			
1971 AVERAGE	60.4	32.0	32	65	3	1.64	15.2	3	62.3	0.45	14.8	1	3	62.6	3	62.6	3	62.6	3
1972 AVERAGE	60.4	34.2	47	50	3	1.62	14.3	2	64.0	0.43	13.7	1	2	61.3	4	61.3	4	61.3	4
CLEAN ORY - SUBTRACT 1 LB./80. FOR DOCKAGE-FREE T.W.																			
1/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
2/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
3/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
4/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
5/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
6/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
7/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
8/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
9/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
10/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
11/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
12/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
13/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
14/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
15/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
16/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
17/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
18/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
19/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
20/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
21/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
22/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
23/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
24/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
25/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
26/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
27/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
28/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
29/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
30/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
31/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
32/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
33/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
34/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
35/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
36/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
37/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
38/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
39/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
40/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
41/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
42/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
43/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
44/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
45/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-SATISFACTORY	5	QUESTIONABLE-UNSATISFACTORY	6	QUESTIONABLE-UNSATISFACTORY	7	UNSATISFACTORY-QUESTIONABLE	8	UNSATISFACTORY			
46/	142	MOISTURE BASIS	2	SATISFACTORY	3	SATISFACTORY-QUESTIONABLE	4	QUESTIONABLE-S											

TABLE 14

QUALITY DATA ON SAWFLY NURSERY SAMPLES

1972 GROUP

VARIETY OR SEL. NO.	T.W. #/80.	1000 KHT.	KERNEL SIZE LG MED SM	WHT. MIN.	WHT. PRO.	KERN. CHAR.	FLR. EXT.	FLR. MIN.	FLR. MAX.	FLR. PRO.	MLG. CHAR.	MIX. ABS.	MIX. PAT.	BAKE ABS.	MIX. TIME	DOUGH CHAR.	CRUMB COLOR	CRUMB GRAIN	LOAF VOL.	BAKE EVAL.	GEN. EVAL.	MINOR DEFICIENCY	MAJOR DEFICIENCY
SIDNEY, MONTANA																							
CHINOOK	60.0	33.2	29	69	2	1.46	12.8	2	67.8	0.54	12.4	1	5	57.8	2	3.00	5	95.5	86.01	177	2	3	M65
CN 72846	60.5	32.7	24	75	1	1.58	13.5	3	67.1	0.47	13.0	1	2	59.0	2	2.75	4	100.0	89.09	186	2	4	
FORTUNA	60.5	39.7	57	41	2	1.61	12.7	4	67.3	0.43	12.5	1	1	60.7	2	3.25	4	98.5	90.99	188	1	4	LG 8A
RESCUE	53.5	28.9	10	87	3	1.68	12.4	4	67.3	0.43	12.0	1	2	56.0	2	3.00	3	99.5	88.09	184	8	1	KW 00
THATCHER	61.0	33.2	36	63	1	1.51	12.6	2	66.7	0.51	12.3	1	4	57.8	2	4.00	6	103.6	80.05	182	5	2	M65 00
CN 02601	60.0	34.2	59	40	1	1.61	13.3	2	66.0	0.57	13.1	1	8	58.3	2	3.00	6	102.6	86.10	185	4	1	00
CN 782846	60.5	32.2	49	50	1	1.61	11.6	4	66.0	0.50	11.4	2	5	58.1	3	3.25	6	100.5	82.05	167	5	2	MP EX 00 LV 8A 00
CN 806840	60.0	30.4	30	68	2	1.72	12.0	5	65.9	0.43	11.5	1	2	57.0	2	3.00	6	101.5	88.10	181	6	2	8A 00
CN 8067212	61.0	33.4	40	59	1	1.58	11.8	4	65.4	0.46	11.2	1	3	56.0	2	3.00	20	100.5	88.01	166	8	1	MP LV
CN 8068215	60.0	30.0	8	90	2	1.70	12.2	5	66.0	0.49	11.6	1	3	56.0	2	3.50	6	101.5	87.01	175	8	1	KW MM 00
MT 7119	61.5	34.2	26	73	1	1.59	12.5	2	67.5	0.51	12.2	1	3	58.7	5	5.00	6	100.5	85.05	183	8	1	M65 MT 00
MT 7019	60.0	33.6	51	48	1	1.56	11.7	8	63.5	0.43	9.7	2	4	53.0	4	3.75	6	101.5	87.01	164	8	1	LG EX 00 LV
MT 7042	60.0	33.6	51	48	1	1.56	11.7	8	63.5	0.43	9.7	2	4	53.0	4	3.75	20	102.7	85.01	158	8	1	LV
MT 7110	60.0	41.2	65	34	1	1.59	11.8	4	65.1	0.44	11.6	1	3	59.1	2	3.50	6	101.7	88.05	176	8	1	MP 00
MT 7119	60.5	32.6	46	53	1	1.59	11.8	4	65.3	0.44	11.2	1	3	56.8	3	4.00	6	101.7	88.05	176	8	1	MP 00
S 686	61.0	39.1	56	43	1	1.58	12.6	2	68.4	0.38	12.4	1	1	59.7	4	3.25	5	101.0	91.99	189	2	4	
S 6662	61.5	41.5	72	28	0	1.63	13.4	2	66.5	0.38	13.0	1	2	60.3	2	2.75	5	101.0	90.99	182	1	4	
S 6677	61.0	36.1	35	63	2	1.78	13.6	3	66.7	0.44	13.1	1	2	60.0	4	3.50	5	101.0	90.90	197	2	4	WM
S 6765	60.0	38.8	69	30	1	1.56	12.9	2	62.4	0.49	12.6	2	8	58.1	2	3.25	6	101.7	90.99	171	4	1	00
S 6851	62.5	38.5	68	31	1	1.59	12.0	4	65.3	0.43	11.5	1	3	57.5	2	3.50	6	102.4	87.01	168	5	2	MP 00 LV
S 6910	60.5	42.2	72	27	1	1.62	11.6	5	64.6	0.41	11.4	1	3	59.3	4	4.00	6	102.6	84.05	173	5	2	EX 00
S 6912	61.5	42.7	65	33	2	1.68	12.4	2	64.3	0.40	12.2	1	3	58.1	4	3.75	6	101.7	89.05	171	4	3	EX 00
S 6916	61.5	40.5	66	33	1	1.51	12.0	4	64.5	0.39	11.8	1	3	58.1	2	4.00	6	101.0	90.99	162	5	2	MP EX 00
S 6924	62.0	40.7	74	25	1	1.53	12.4	2	65.4	0.42	11.9	1	3	57.8	2	2.75	6	100.5	85.01	171	5	2	00

1/ CLEAN ORY - SUBTRACT 1 LB./80. FOR DOCKAGE-FREE T.W.

2/ 1% MOISTURE BASIS.

3/ 1 = VERY SATISFACTORY, 2 = SATISFACTORY, 3 = SATISFACTORY-QUESTIONABLE, 4 = QUESTIONABLE-SATISFACTORY, 5 = QUESTIONABLE, 6 = QUESTIONABLE-UNSATISFACTORY, 7 = UNSATISFACTORY-QUESTIONABLE, 8 = UNSATISFACTORY.

4/ 1 = NORMAL, 2 = NORMAL-SOFT, 3 = SOFT-NORMAL, 4 = SOFT, 5 = GRITTY, 6 = VERY SUFT.

5/ REFER TO REFERENCE MIXOGRAMS FOR NUMERICAL CURVE PATTERN. (1 = VERY WEAK, 11 = VERY STRONG)

6/ 1 = BUCKY, 2 = VERY ELASTIC, 3 = ELASTIC, 4 = ELASTIC-PLIABLE, 5 = PLIABLE-ELASTIC, 6 = PLIABLE, 7 = PLIABLE-WEAK, 8 = WEAK-PLIABLE, 9 = WEAK, 10 = VERY WEAK, 20 = SLIGHTLY OEAU, 30 = DEAD.

7/ XXX-00 = 80% WHITE, XXX-01 = WHITE, XXX-02 = SLIGHTLY GREY, XXX-03 = GREY, XXX-04 = VERY GREY, XXX-05 = VERY GRAY, XXX-06 = VERY SLIGHTLY IRREGULAR, XXX-07 = IRREGULAR, XXX-08 = OPEN, XXX-09 = OPEN, XXX-10 = IRREGULAR, XXX-11 = SLIGHTLY UPEN, XXX-12 = SLIGHTLY UPEN, XXX-13 = SLIGHTLY UPEN, XXX-14 = SLIGHTLY UPEN, XXX-15 = SLIGHTLY UPEN, XXX-16 = SLIGHTLY UPEN, XXX-17 = SLIGHTLY UPEN, XXX-18 = SLIGHTLY UPEN, XXX-19 = SLIGHTLY UPEN, XXX-20 = SLIGHTLY UPEN, XXX-21 = SLIGHTLY UPEN, XXX-22 = SLIGHTLY UPEN, XXX-23 = SLIGHTLY UPEN, XXX-24 = SLIGHTLY UPEN, XXX-25 = SLIGHTLY UPEN, XXX-26 = SLIGHTLY UPEN, XXX-27 = SLIGHTLY UPEN, XXX-28 = SLIGHTLY UPEN, XXX-29 = SLIGHTLY UPEN, XXX-30 = SLIGHTLY UPEN, XXX-31 = SLIGHTLY UPEN, XXX-32 = SLIGHTLY UPEN, XXX-33 = SLIGHTLY UPEN, XXX-34 = SLIGHTLY UPEN, XXX-35 = SLIGHTLY UPEN, XXX-36 = SLIGHTLY UPEN, XXX-37 = SLIGHTLY UPEN, XXX-38 = SLIGHTLY UPEN, XXX-39 = SLIGHTLY UPEN, XXX-40 = SLIGHTLY UPEN, XXX-41 = SLIGHTLY UPEN, XXX-42 = SLIGHTLY UPEN, XXX-43 = SLIGHTLY UPEN, XXX-44 = SLIGHTLY UPEN, XXX-45 = SLIGHTLY UPEN, XXX-46 = SLIGHTLY UPEN, XXX-47 = SLIGHTLY UPEN, XXX-48 = SLIGHTLY UPEN, XXX-49 = SLIGHTLY UPEN, XXX-50 = SLIGHTLY UPEN, XXX-51 = SLIGHTLY UPEN, XXX-52 = SLIGHTLY UPEN, XXX-53 = SLIGHTLY UPEN, XXX-54 = SLIGHTLY UPEN, XXX-55 = SLIGHTLY UPEN, XXX-56 = SLIGHTLY UPEN, XXX-57 = SLIGHTLY UPEN, XXX-58 = SLIGHTLY UPEN, XXX-59 = SLIGHTLY UPEN, XXX-60 = SLIGHTLY UPEN, XXX-61 = SLIGHTLY UPEN, XXX-62 = SLIGHTLY UPEN, XXX-63 = SLIGHTLY UPEN, XXX-64 = SLIGHTLY UPEN, XXX-65 = SLIGHTLY UPEN, XXX-66 = SLIGHTLY UPEN, XXX-67 = SLIGHTLY UPEN, XXX-68 = SLIGHTLY UPEN, XXX-69 = SLIGHTLY UPEN, XXX-70 = SLIGHTLY UPEN, XXX-71 = SLIGHTLY UPEN, XXX-72 = SLIGHTLY UPEN, XXX-73 = SLIGHTLY UPEN, XXX-74 = SLIGHTLY UPEN, XXX-75 = SLIGHTLY UPEN, XXX-76 = SLIGHTLY UPEN, XXX-77 = SLIGHTLY UPEN, XXX-78 = SLIGHTLY UPEN, XXX-79 = SLIGHTLY UPEN, XXX-80 = SLIGHTLY UPEN, XXX-81 = SLIGHTLY UPEN, XXX-82 = SLIGHTLY UPEN, XXX-83 = SLIGHTLY UPEN, XXX-84 = SLIGHTLY UPEN, XXX-85 = SLIGHTLY UPEN, XXX-86 = SLIGHTLY UPEN, XXX-87 = SLIGHTLY UPEN, XXX-88 = SLIGHTLY UPEN, XXX-89 = SLIGHTLY UPEN, XXX-90 = SLIGHTLY UPEN, XXX-91 = SLIGHTLY UPEN, XXX-92 = SLIGHTLY UPEN, XXX-93 = SLIGHTLY UPEN, XXX-94 = SLIGHTLY UPEN, XXX-95 = SLIGHTLY UPEN, XXX-96 = SLIGHTLY UPEN, XXX-97 = SLIGHTLY UPEN, XXX-98 = SLIGHTLY UPEN, XXX-99 = SLIGHTLY UPEN, XXX-100 = SLIGHTLY UPEN.

8/ XXX-50 = SLIGHTLY IRREGULAR, OPEN, XXX-70 = SLIGHTLY OPEN, XXX-90 = SLIGHTLY IRREGULAR, XXX-99 = NORMAL.

9/ 1 = NO PROMISE, 2 = LITTLE PROMISE, 3 = SOME PROMISE, 4 = GOOD PROMISE.

1973 CH19

[illegible][illegible]

QUALITY DATA ON SAMPLY NURSERY SAMPLES

1972 CROP

VARIETY OR SEL. NO.	T.W. #/BU.	1000 KWT.	KERNEL SIZE			WHT. MIN.	WHT. PRU.	KERN. CHAR.	FLR. EXT.	FLR. MIN.	FLR. PRO.	MLG. CHAR.	MLG. PER.	MIX. ABS.	MIX. PAT.	BAKE ABS.	MIX. TIME	DOUGH			CRUMB COLOR	CRUMB GRAIN	LOAF		BAKE VOL.	GEN. EVAL.	MINOR DEFICIENCY	MAJOR DEFICIENCY	
			LG	MED	SM													6L	7L	8L			9L	CC.					
MILLISTON, NORTH OKOTA																													
CHINOOK	63.0	36.1	46	53	1	1.40	13.2	2	64.5	0.37	13.0	1	2	59.0	2	59.0	2.75	5	102.0	85.01	176	2	4						
CHRIS	63.0	28.2	21	77	2	1.39	13.5	4	63.8	0.39	13.2	1	3	58.1	2	58.1	2.75	4	104.0	89.09	181	3	3	KW	LG				
FORTUNA	63.5	41.8	57	42	1	1.41	12.9	3	66.5	0.35	12.7	1	1	59.0	2	59.0	2.75	5	103.6	84.07	178	2	4						
RESUE	63.0	33.6	31	68	1	1.38	13.8	3	64.0	0.36	13.6	1	2	59.0	2	59.0	2.50	4	101.7	89.09	189	3	4	KW	BA	OU			
THATCHER	62.5	30.9	29	70	1	1.45	13.5	3	64.2	0.42	13.0	1	5	57.0	2	57.0	2.50	6	101.0	88.01	182	6	1						
CN 02601	62.5	32.3	29	70	1	1.47	14.2	3	64.5	0.45	14.0	1	8	59.7	2	59.7	3.25	6	101.0	84.01	185	4	1	DU					
CN 782846	62.0	34.8	35	64	1	1.43	14.0	2	62.2	0.38	13.2	2	3	58.7	2	58.7	2.50	4	102.0	86.01	175	4	3	UU					
CN 806840	63.0	27.5	15	83	2	1.40	13.0	4	63.4	0.38	12.8	2	3	59.0	2	59.0	3.00	6	101.0	90.99	171	4	3	KW	LG	OU			
CN 8067212	63.5	29.5	27	72	1	1.40	13.0	3	64.0	0.38	12.1	1	2	56.7	2	56.7	3.00	20	102.8	84.01	165	8	1	KW	BA	LV			
CN 8068215	63.5	28.8	6	93	1	1.42	13.7	8	63.6	0.42	12.9	1	5	62.8	3	62.8	3.25	6	100.7	86.01	180	4	1	KW	OU	LG	M6.5		
MT 711	64.0	33.2	25	74	1	1.36	13.4	3	65.8	0.36	12.9	1	1	61.6	5	61.6	5.00	5	102.0	75.09	202	3	4	LG	MT	GR			
MT 7019	62.5	28.7	8	90	2	1.36	12.9	8	63.4	0.36	12.1	1	2	59.0	3	59.0	3.50	6	101.0	88.01	178	4	1	KW	OU				
MT 7110	62.0	39.7	71	28	1	1.36	13.8	2	62.7	0.34	13.3	2	3	62.5	4	62.5	3.50	5	100.0	90.70	182	1	4	KW	SM	OU			
MT 7119	62.0	30.0	14	83	3	1.36	12.8	5	63.4	0.37	12.3	1	3	58.7	3	58.7	3.00	6	101.7	90.00	181	4	3	KW	SM	OU			
S 686	62.5	35.7	57	42	1	1.43	13.1	2	67.2	0.32	12.9	1	1	61.0	3	61.0	3.00	5	100.0	88.01	182	2	4						
S 6662	63.0	36.0	55	44	1	1.48	13.9	2	65.1	0.34	13.4	1	2	62.5	3	62.5	3.00	5	101.8	88.01	180	2	4						
S 6765	62.5	37.7	63	36	1	1.28	13.6	2	62.9	0.36	13.3	1	2	62.3	3	62.3	3.00	4	100.7	89.01	183	1	4						
S 6851	64.0	37.9	64	35	1	1.43	13.8	2	62.9	0.36	12.9	1	2	61.0	3	61.0	3.00	4	101.0	88.01	186	3	4						
S 6910	61.5	39.2	62	37	1	1.22	12.9	4	64.5	0.31	12.7	1	1	60.3	3	60.3	3.00	4	100.0	90.01	182	2	4						
S 6912	63.5	36.9	54	41	1	1.23	13.0	2	63.3	0.32	12.7	1	2	59.7	3	59.7	3.00	5	101.0	91.99	168	2	4						
S 6916	63.5	37.3	57	42	1	1.26	12.4	4	63.1	0.32	12.3	1	2	61.0	3	61.0	3.00	6	100.0	91.99	170	4	3	WP	OU				
S 6924	63.0	37.2	66	33	1	1.35	13.1	2	64.2	0.35	12.7	1	2	59.0	2	59.0	2.75	6	100.0	90.99	165	5	3	OU	LV				

1/ CLEAN DRY - SUBTRACT 1 LB./BU. FOR UNCOCKAGE-FREE T.M.

2/ 14% MOISTURE MAXIMUM

3/ 1 = VERY SATISFACTORY, 2 = SATISFACTORY, 3 = SATISFACTORY-QUESTIONABLE, 4 = QUESTIONABLE-UNSATISFACTORY, 5 = QUESTIONABLE, 6 = QUESTIONABLE-UNSATISFACTORY, 7 = UNSATISFACTORY-QUESTIONABLE, 8 = UNSATISFACTORY.

4/ 1 = NORMAL, 2 = NORMAL-SOFT, 3 = SUFT-NORMAL, 4 = SUFT, 5 = GRITTY, 6 = VERY SOFT.

5/ REFER TO REFERENCE MIXOGRAMS FOR NUMERICAL CURVE PATTERN. 11 = VERY WEAK --- 11 = VERY STRONG

6/ 1 = RUCKY, 2 = VERY ELASTIC, 3 = ELASTIC, 4 = ELASTIC-PLIABLE, 5 = PLIABLE-ELASTIC, 6 = PLIABLE, 7 = PLIABLE-WEAK, 8 = WEAK-PLIABLE, 9 = WEAK, 10 = VERY WEAK, 20 = SLIGHTLY DEAD, 30 = DEAD.

7/ XXX-9 = BRIGHT WHITE, XXX-8 = WHITE, XXX-7 = SLIGHTLY CREAMY, XXX-6 = BRIGHT CREAMY, XXX-5 = CREAMY, XXX-4 = VERY CREAMY, XXX-3 = GRAY, XXX-2 = DULL GRAY, XXX-1 = VERY GRAY.

8/ XXX-00 = SOGGY, XXX-01 = THICK WALL OR HARSH, XXX-03 = CLUSE, XXX-05 = UPEN, XXX-06 = UPEN, SLIGHTLY IRREGULAR, XXX-07 = IRREGULAR, UPEN, XXX-09 = UPEN, XXX-10 = SLIGHTLY OPEN, IRREGULAR, XXX-50 = SLIGHTLY OPEN, IRREGULAR.

9/ 1 = NO PROMISE, 2 = LITTLE PROMISE, 3 = SOME PROMISE, 4 = GOOD PROMISE.

TABLE 17

QUALITY DATA ON SAWFLY NURSERY SAMPLES

1972 CROP

VARIETY OR SEL. NO.	T.W. #/BU.	1000 KMT.	KERNEL SIZE			WHT. MIN.	WHT. PRO.	KERN. CHAR.	FLR. EXT.	FLR. MIN.	FLR. PRO.	MLG. CHAR.	MLG. PER.	MIX. ABS.	MIX. PAT.	BAKE ABS.	MIX. TIME	DOUGH CHAR.	CRUMB COLOR	CRUMB GRAIN	LOAF VOL.	BAKE EVAL.	GEN. EVAL.	MINOR DEFICIENCY	MAJOR DEFICIENCY
		G.	g	g	g	g	g	g	g	g	g	g	g	g	g	g	MIN.	g	g	g	CC.	3/	3/		
AVERAGE OF QUALITY DATA																									
CHINDOK	61-5	32.7	33	64	3	1.58	13.6	2	65.3	0.44	13-2	1	3	60.3	2	60.3	2.75	5	99.3	87.77	178	2	4		
CHRIS	61-9	29.4	25	73	2	1.56	14.4	3	65.3	0.44	14-0	1	2	61.2	3	61.2	2.87	4	100.8	89.71	184	3	4		
FORTUNA	61-8	37.5	46	52	2	1.57	13.5	2	66.3	0.42	13-1	1	2	61.5	3	61.5	3.12	5	101.4	87.78	183	2	4		
RESCUE	60-5	28.6	21	73	6	1.66	13.7	4	64.5	0.43	13-2	1	3	59.6	3	59.6	3.06	4	101.2	88.33	186	3	3	KW	LG SM
THATCHER	61-0	29.6	25	73	2	1.57	13.5	3	65.5	0.46	12-9	1	3	58.9	3	58.9	2.87	6	101.4	86.91	181	6	2	M65	BA OU
CN 02601	61-0	31.2	37	62	1	1.64	14.6	2	64.6	0.50	14-1	1	8	61.4	3	61.4	3.06	5	101.4	86.39	185	2	1		M65
CN 782846	60-5	30.8	33	65	2	1.60	13.8	2	63.1	0.45	13-3	2	4	60.9	3	60.9	3.12	6	100.4	86.73	180	4	3	OU	KW LG MH OU
CN 808840	60-0	23.7	16	73	11	1.69	13.5	5	63.2	0.43	13-1	2	3	60.6	3	60.6	3.18	4	101.1	88.29	179	4	3	KW	LG MH OU
CN 8087212	61-5	28.8	23	74	8	1.55	12.7	5	63.2	0.42	11-8	2	3	58.8	2	58.8	2.75	13	101.0	87.75	170	8	1	KW	MP BA
CN 8088215	60-8	26.6	6	86	8	1.67	13.6	8	64.5	0.45	13-0	1	3	61.4	3	61.4	3.43	5	101.6	88.02	178	2	1	KW	SM LG
MT 711	62-1	32.2	23	74	3	1.59	14.1	3	65.3	0.46	13-8	1	3	61.3	5	61.3	4.75	5	100.4	83.06	195	4	3	M65	MT
MT 7019	58-8	26.1	7	83	10	1.61	12.6	8	62.4	0.47	11-9	1	6	59.2	4	59.2	3.81	5	101.1	88.75	176	4	1	TM	KW MP EX M65 BA
MT 7110	60-9	39.3	63	35	2	1.55	13.7	2	63.3	0.41	13-5	2	3	61.1	3	61.1	3.43	5	101.0	88.87	180	2	4	1	TM
MT 7119	57-0	27.5	19	74	7	1.64	13.0	6	63.0	0.47	12-6	1	3	59.3	3	59.3	3.56	6	101.6	88.48	185	6	1	1	TM
S 686	61-4	35.6	44	54	2	1.56	13.6	2	66.9	0.42	13-3	1	1	62.0	3	62.0	3.18	5	100.6	88.53	185	2	4		
S 6662	61-6	35.9	48	50	2	1.63	14.1	2	64.1	0.39	13-7	1	2	62.0	3	62.0	2.81	5	101.2	87.78	181	2	4		EX
S 6765	60-5	36.7	57	42	1	1.51	14.1	2	61.3	0.44	13-7	2	6	61.8	3	61.8	4.27	4	101.9	87.52	181	2	4		
S 6891	62-6	36.6	56	43	1	1.60	13.9	2	63.8	0.41	13-3	1	2	61.0	3	61.0	3.11	5	101.1	87.52	181	2	4		
S 6910	60-3	37.5	55	43	2	1.42	13.3	2	63.3	0.47	13-1	1	3	61.2	4	61.2	3.31	5	101.5	88.27	180	2	4		
S 6912	62-4	38.4	60	38	2	1.43	13.5	2	62.8	0.39	13-1	1	3	60.5	4	60.5	3.50	6	101.5	88.51	174	4	3	EX	OU
S 6916	62-1	37.8	56	42	2	1.48	13.2	3	62.6	0.39	12-9	1	3	61.3	3	61.3	3.31	6	100.5	89.48	171	5	2	EX	OU
S 6924	62-0	37.1	63	35	2	1.52	13.5	2	64.1	0.41	12-9	1	2	59.8	2	59.8	2.75	10	99.0	86.00	167	8	1	LV	OU
1/ CLEAN DRY - SUBTRACT 1 LB./BU. FOR DUCKAGE-FREE T.W.																									
2/ 1% MOISTURE BASIS.																									
3/ 1 = VERY SATISFACTORY, 2 = SATISFACTORY-QUESTIONABLE, 4 = QUESTIONABLE-SATISFACTORY, 5 = QUESTIONABLE, 6 = QUESTIONABLE-UNSATISFACTORY, 7 = UNSATISFACTORY-QUESTIONABLE, 8 = UNSATISFACTORY.																									
4/ REFERENCE: NORMAL-SOFT, 5 = SOFT-NORMAL, 6 = SOFT, 7 = VERY SOFT. 8 = VERY DRY. 9 = VERY DRY. 10 = VERY DRY. 11 = VERY DRY. 12 = VERY DRY. 13 = VERY DRY. 14 = VERY DRY. 15 = VERY DRY. 16 = VERY DRY. 17 = VERY DRY. 18 = VERY DRY. 19 = VERY DRY. 20 = VERY DRY. 21 = VERY DRY. 22 = VERY DRY. 23 = VERY DRY. 24 = VERY DRY. 25 = VERY DRY. 26 = VERY DRY. 27 = VERY DRY. 28 = VERY DRY. 29 = VERY DRY. 30 = VERY DRY. 31 = VERY DRY. 32 = VERY DRY. 33 = VERY DRY. 34 = VERY DRY. 35 = VERY DRY. 36 = VERY DRY. 37 = VERY DRY. 38 = VERY DRY. 39 = VERY DRY. 40 = VERY DRY. 41 = VERY DRY. 42 = VERY DRY. 43 = VERY DRY. 44 = VERY DRY. 45 = VERY DRY. 46 = VERY DRY. 47 = VERY DRY. 48 = VERY DRY. 49 = VERY DRY. 50 = VERY DRY. 51 = VERY DRY. 52 = VERY DRY. 53 = VERY DRY. 54 = VERY DRY. 55 = VERY DRY. 56 = VERY DRY. 57 = VERY DRY. 58 = VERY DRY. 59 = VERY DRY. 60 = VERY DRY. 61 = VERY DRY. 62 = VERY DRY. 63 = VERY DRY. 64 = VERY DRY. 65 = VERY DRY. 66 = VERY DRY. 67 = VERY DRY. 68 = VERY DRY. 69 = VERY DRY. 70 = VERY DRY. 71 = VERY DRY. 72 = VERY DRY. 73 = VERY DRY. 74 = VERY DRY. 75 = VERY DRY. 76 = VERY DRY. 77 = VERY DRY. 78 = VERY DRY. 79 = VERY DRY. 80 = VERY DRY. 81 = VERY DRY. 82 = VERY DRY. 83 = VERY DRY. 84 = VERY DRY. 85 = VERY DRY. 86 = VERY DRY. 87 = VERY DRY. 88 = VERY DRY. 89 = VERY DRY. 90 = VERY DRY. 91 = VERY DRY. 92 = VERY DRY. 93 = VERY DRY. 94 = VERY DRY. 95 = VERY DRY. 96 = VERY DRY. 97 = VERY DRY. 98 = VERY DRY. 99 = VERY DRY. 100 = VERY DRY.																									
5/ 1 = BUCKY, 2 = VERY ELASTIC, 3 = ELASTIC, 4 = ELASTIC-PLIABLE, 5 = PLIABLE-ELASTIC, 6 = PLIABLE, 7 = PLIABLE-WEAK, 8 = WEAK-PLIABLE, 9 = WEAK, 10 = VERY WEAK, 20 = SLIGHTLY DEAD, 30 = DEAD.																									
6/ XXX-9 = BRIGHT WHITE, XXX-8 = WHITE, XXX-7 = SLIGHTLY GREASY, XXX-6 = BRIGHT GREASY, XXX-5 = GREASY, XXX-4 = VERY CREAMY, XXX-3 = GRAY, XXX-2 = DULL GRAY, XXX-1 = VERY GRAY.																									
7/ XXX-00 = SUGGY, XXX-01 = THICK WALL OR HARSH, XXX-03 = CLOSE, XXX-05 = OPEN, IRREGULAR, XXX-06 = OPEN, SLIGHTLY IRREGULAR, XXX-07 = IRREGULAR, XXX-09 = OPEN, XXX-10 = IRREGULAR, XXX-30 = SLIGHTLY OPEN, IRREGULAR.																									
8/ XXX-50 = SLIGHTLY IRREGULAR, XXX-70 = SLIGHTLY OPEN, XXX-90 = SLIGHTLY IRREGULAR, XXX-99 = NORMAL.																									
9/ 1 = NO PROMISE, 2 = LITTLE PROMISE, 3 = SOME PROMISE, 4 = GOOD PROMISE.																									

1/ CLEAN DRY - SUBTRACT 1 LB./BU. FOR DOCKAGE-FREE T.W.

2/ 14% MOISTURE BASIS.

3/ 1 = NORMAL, 2 = NORMAL-SOFT, 3 = SOFT-NORMAL, 4 = SOFT, 5 = CRITTY, 6 = VERY SOFT.

4/ 1 = NORMAL, 2 = NORMAL-SOFT, 3 = SOFT-NORMAL, 4 = SOFT, 5 = CRITTY, 6 = VERY SOFT.

5/ REFER TO REFERENCE MIXOGRAMS FOR NUMERICAL CURVE PATTERNS. (1 = VERY WEAK, 11 = VERY STRONG)

6/ XXX-00 = SUGGY, XXX-01 = THICK, XXX-02 = SLIGHTLY IRREGULAR, XXX-03 = SLIGHTLY IRREGULAR, XXX-04 = SLIGHTLY IRREGULAR, XXX-05 = SLIGHTLY IRREGULAR, XXX-06 = SLIGHTLY IRREGULAR, XXX-07 = SLIGHTLY IRREGULAR, XXX-08 = SLIGHTLY IRREGULAR, XXX-09 = SLIGHTLY IRREGULAR, XXX-10 = SLIGHTLY IRREGULAR, XXX-11 = SLIGHTLY IRREGULAR, XXX-12 = SLIGHTLY IRREGULAR, XXX-13 = SLIGHTLY IRREGULAR, XXX-14 = SLIGHTLY IRREGULAR, XXX-15 = SLIGHTLY IRREGULAR, XXX-16 = SLIGHTLY IRREGULAR, XXX-17 = SLIGHTLY IRREGULAR, XXX-18 = SLIGHTLY IRREGULAR, XXX-19 = SLIGHTLY IRREGULAR, XXX-20 = SLIGHTLY IRREGULAR, XXX-21 = SLIGHTLY IRREGULAR, XXX-22 = SLIGHTLY IRREGULAR, XXX-23 = SLIGHTLY IRREGULAR, XXX-24 = SLIGHTLY IRREGULAR, XXX-25 = SLIGHTLY IRREGULAR, XXX-26 = SLIGHTLY IRREGULAR, XXX-27 = SLIGHTLY IRREGULAR, XXX-28 = SLIGHTLY IRREGULAR, XXX-29 = SLIGHTLY IRREGULAR, XXX-30 = SLIGHTLY IRREGULAR, XXX-31 = SLIGHTLY IRREGULAR, XXX-32 = SLIGHTLY IRREGULAR, XXX-33 = SLIGHTLY IRREGULAR, XXX-34 = SLIGHTLY IRREGULAR, XXX-35 = SLIGHTLY IRREGULAR, XXX-36 = SLIGHTLY IRREGULAR, XXX-37 = SLIGHTLY IRREGULAR, XXX-38 = SLIGHTLY IRREGULAR, XXX-39 = SLIGHTLY IRREGULAR, XXX-40 = SLIGHTLY IRREGULAR, XXX-41 = SLIGHTLY IRREGULAR, XXX-42 = SLIGHTLY IRREGULAR, XXX-43 = SLIGHTLY IRREGULAR, XXX-44 = SLIGHTLY IRREGULAR, XXX-45 = SLIGHTLY IRREGULAR, XXX-46 = SLIGHTLY IRREGULAR, XXX-47 = SLIGHTLY IRREGULAR, XXX-48 = SLIGHTLY IRREGULAR, XXX-49 = SLIGHTLY IRREGULAR, XXX-50 = SLIGHTLY IRREGULAR, XXX-51 = SLIGHTLY IRREGULAR, XXX-52 = SLIGHTLY IRREGULAR, XXX-53 = SLIGHTLY IRREGULAR, XXX-54 = SLIGHTLY IRREGULAR, XXX-55 = SLIGHTLY IRREGULAR, XXX-56 = SLIGHTLY IRREGULAR, XXX-57 = SLIGHTLY IRREGULAR, XXX-58 = SLIGHTLY IRREGULAR, XXX-59 = SLIGHTLY IRREGULAR, XXX-60 = SLIGHTLY IRREGULAR, XXX-61 = SLIGHTLY IRREGULAR, XXX-62 = SLIGHTLY IRREGULAR, XXX-63 = SLIGHTLY IRREGULAR, XXX-64 = SLIGHTLY IRREGULAR, XXX-65 = SLIGHTLY IRREGULAR, XXX-66 = SLIGHTLY IRREGULAR, XXX-67 = SLIGHTLY IRREGULAR, XXX-68 = SLIGHTLY IRREGULAR, XXX-69 = SLIGHTLY IRREGULAR, XXX-70 = SLIGHTLY IRREGULAR, XXX-71 = SLIGHTLY IRREGULAR, XXX-72 = SLIGHTLY IRREGULAR, XXX-73 = SLIGHTLY IRREGULAR, XXX-74 = SLIGHTLY IRREGULAR, XXX-75 = SLIGHTLY IRREGULAR, XXX-76 = SLIGHTLY IRREGULAR, XXX-77 = SLIGHTLY IRREGULAR, XXX-78 = SLIGHTLY IRREGULAR, XXX-79 = SLIGHTLY IRREGULAR, XXX-80 = SLIGHTLY IRREGULAR, XXX-81 = SLIGHTLY IRREGULAR, XXX-82 = SLIGHTLY IRREGULAR, XXX-83 = SLIGHTLY IRREGULAR, XXX-84 = SLIGHTLY IRREGULAR, XXX-85 = SLIGHTLY IRREGULAR, XXX-86 = SLIGHTLY IRREGULAR, XXX-87 = SLIGHTLY IRREGULAR, XXX-88 = SLIGHTLY IRREGULAR, XXX-89 = SLIGHTLY IRREGULAR, XXX-90 = SLIGHTLY IRREGULAR, XXX-91 = SLIGHTLY IRREGULAR, XXX-92 = SLIGHTLY IRREGULAR, XXX-93 = SLIGHTLY IRREGULAR, XXX-94 = SLIGHTLY IRREGULAR, XXX-95 = SLIGHTLY IRREGULAR, XXX-96 = SLIGHTLY IRREGULAR, XXX-97 = SLIGHTLY IRREGULAR, XXX-98 = SLIGHTLY IRREGULAR, XXX-99 = SLIGHTLY IRREGULAR, XXX-100 = SLIGHTLY IRREGULAR.

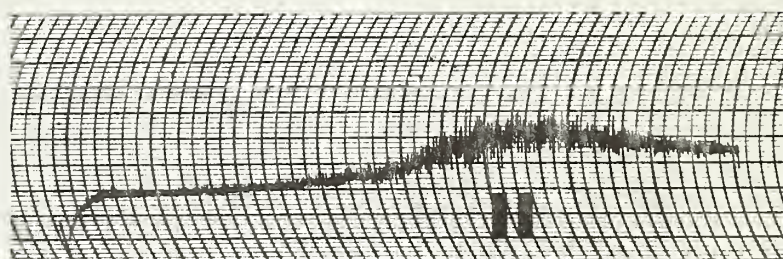
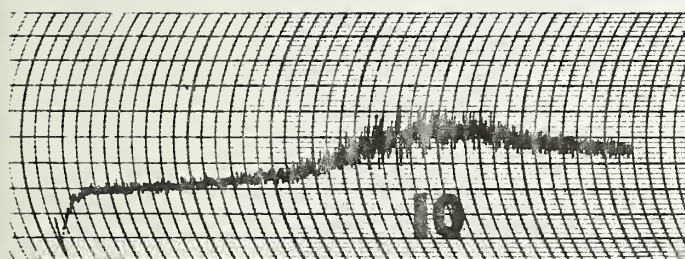
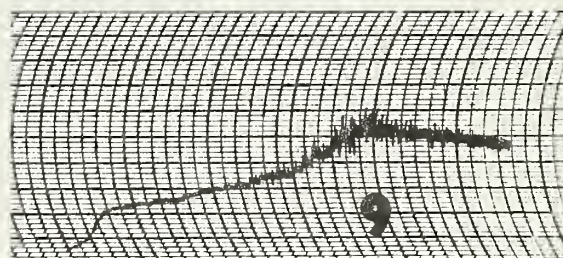
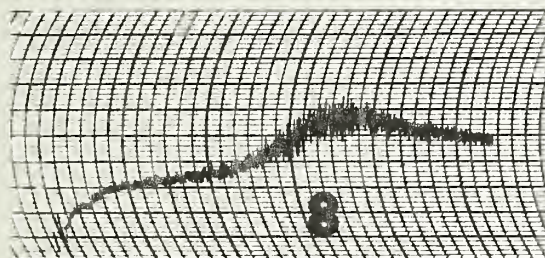
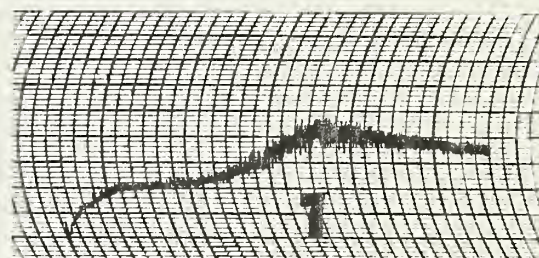
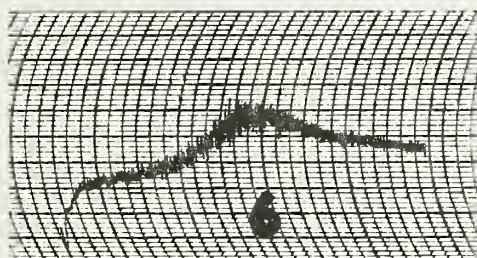
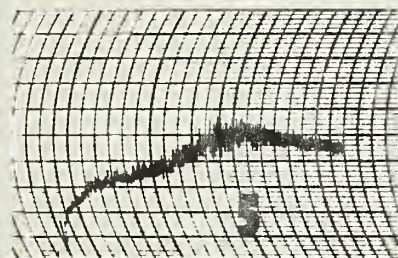
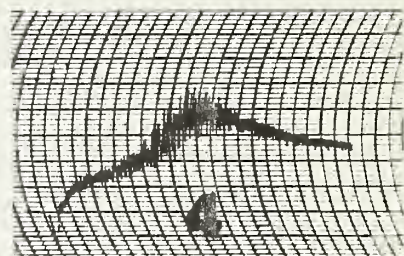
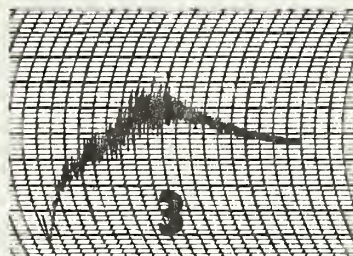
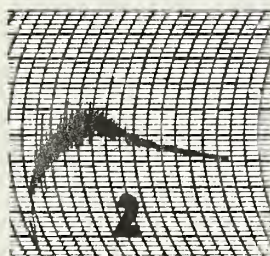
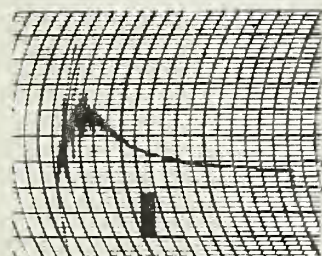
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9/ 1 = NO PROMISE, 2 = LITTLE PROMISE, 3 = SOME PROMISE, 4 = GOOD PROMISE.

REFERENCE MIXOGRAMS

HARD RED SPRING WHEAT



U.S.D.A. SPRING WHEAT QUALITY LABORATORY

FARGO, NORTH DAKOTA



